THIS WEEK'S National Petroleum NEWS

Coming Meetings

American Society of Testing Materials, Committee D-2, Pittsburgh, Pa., March 16, 17, 18.

Oil Equipment & Engineering Exposition, Los Angeles, March 16 to 22.

Ohio Oil & Gas Men's Association, Deshler-Wallick Hotel, Columbus, O., March 17, 18.

American Association of Petroleum Geologists, Gunter Hotel, San Antonio, Texas, March 19, 20 and 21.

Independent Oil Men of America, Chicago, March 23, 24. (Hotel not yet selected. Annual business meeting and election of officers).

American Chemical Society, Indianapolis, Ind., March 30 to April 3.

American Oil Burner Association, Ben Franklin Hotel, Philadelphia, Pa., April 13 to 18.

American Petroleum Institute, division of refining, semi-annual meeting, Hotel Statler, St. Louis, Apr. 15, 16.

National Petroleum Association, Hotel Cleveland, Cleveland, O., Apr. 23, 24.

American Gas Association, Natural Gas Department, Memphis, Tenn., May 11 to 14.

American Oil Chemists Society, New Orleans, La., May 14, 15.

Natural Gasoline Association of America, Mayo Hotel, Tulsa, May 19, 20, 21.

American Petroleum Institute, Division of Production, Baker Hotel, Dallas, Tex., June 3, 4.

American Society of Mechanical Engineers, National Oil & Gas Power meeting, Madison, Wis., June 15 to 18.

Geological Society of America, Mayo Hotel, Tulsa, Dec. 28 to 31.

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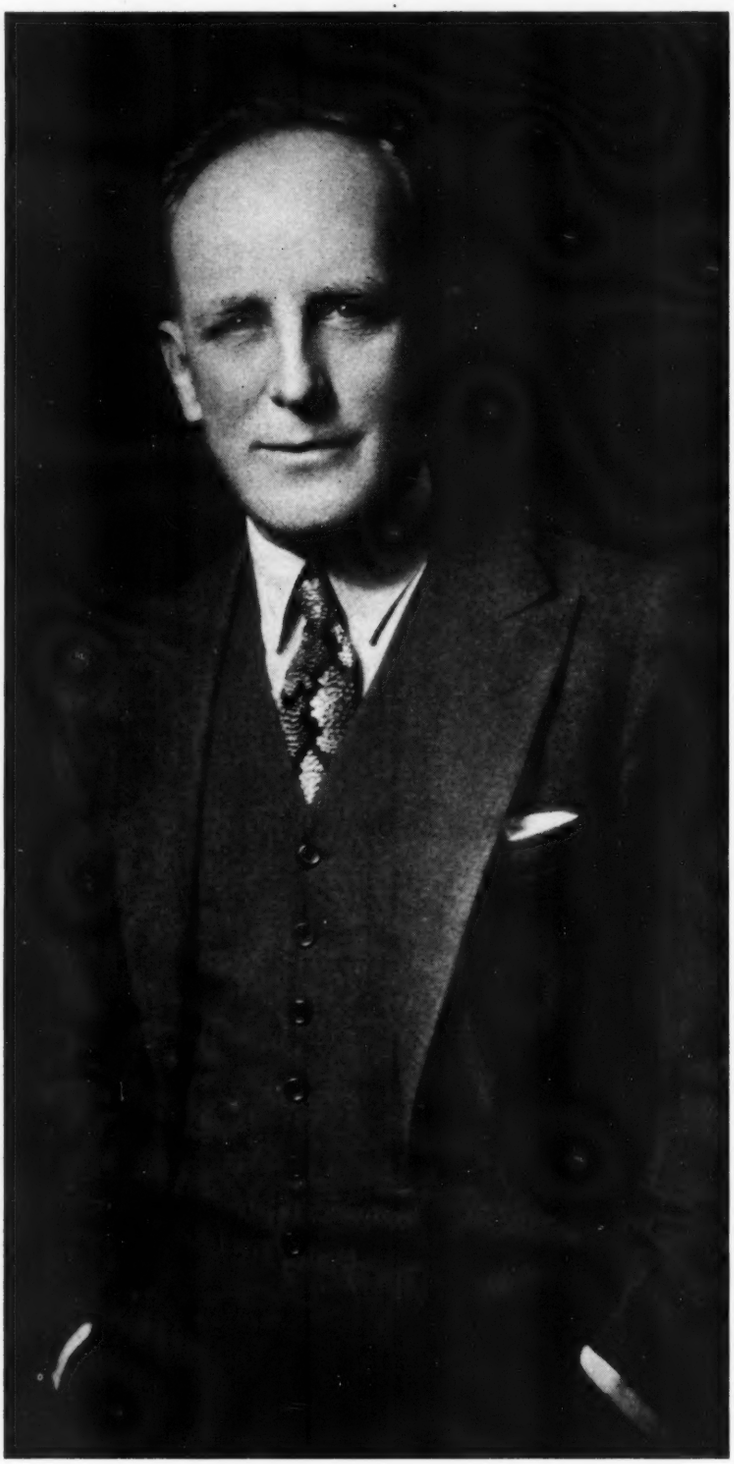

LIKE many another oil company executive, C. G. Yankey, president of the El Dorado Refining Co., came into the industry via the law. He was born in Lowell, Wis., and is a graduate of the University of Wisconsin law school. He started practice in 1902 and continues to maintain his law offices in Wichita, Kans.

His connection with the El Dorado Refining Co. began with the formation of the company in 1916 and he has been president of the company for the past 10 years. He is also a member of the producing firm of Stearns, Streeter & Yankey, which controls substantial production in Kansas and is one of the leading drilling contracting firms of the state.

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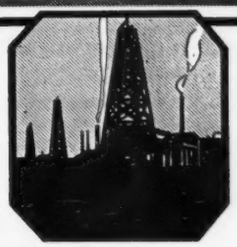

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Chicago

Vol. 23 CLEVELAND, March 11, 1931 No. 10

Lowest Price for Crude Oil Since 1915 Brings Protest from Governors

By Lawrence E. Smith
N. P. N. STAFF WRITER

TULSA, March 7

AFTER three days of the new price schedule for crude oil in the Mid-Continent—lowest since the days of Cushing, in 1915—efforts were being made by oil men and governors of Mid-Continent states to secure relief for producers in this area. The price cuts, ranging from 12 to 40 cents, affected crude in Oklahoma, Kansas, North, North Central and East Central Texas. The Texas Panhandle, West Texas, south and southwest Texas crudes were unchanged.

Pressure was being put upon Gov. Ross S. Sterling, of Texas, by oil men and officials of neighboring states to exert all his influence to bring the new East Texas area into harmony with the proration programs in other flush areas.

Governors Woodring, of Kansas, and Murray, of Oklahoma, telegraphed their sentiments in the matter. The meeting of the Oil States Advisory Committee, in Texarkana, March 9, to be attended by governors or their representatives from nine states, promised to spend much time discussing this critical period in the industry.

That the time is critical there is no doubt. Thousands of wells will be shut down because the present revenue is less than the direct expense of operation. E. B. Reeser, president of the Barnsdall Corp., estimates that 55 per cent of Oklahoma's wells will be below the line of break-even operation. The average pipeline stream of oil from Oklahoma falls in the 37-37.9 bracket and the new price on this grade is 61 cents, a reduction of 37 cents.

There are thousands of wells in Oklahoma and Kansas, small in production, whose oil is lower in gravity than this. The "stripper" wells of Oklahoma and Kansas, which have caused so much worry since the Prairie Oil & Gas Co. ceased buying oil Jan. 1, largely fall into those classes where production is now bringing 51 cents and less per barrel. Few can show an operating cost under the revenues they now will receive.

The price cut initiated by the Stanolind Crude Oil Purchasing Co., buying agency of the Standard Oil Co. of Indiana, March 5 carried reductions of 22 to 40 cents per barrel, with a low price of 43 cents for oil below 29° and a high price of 67 cents for 40° and above.

It was effective the morning following a decision of the Oklahoma corporation commission increasing the allowable production of the Oklahoma City field to 150,000 barrels daily, a raise of 25,000 barrels.

There was an attempt in a portion of the press in Oklahoma to connect the two events; to say that the Indiana company cut the price because Oklahoma City was being opened a little more. That is not true. NATIONAL PETROLEUM NEWS had the information on the price reduction before the corporation commission made its decision, which came at the conclusion of a hearing lasting parts of three days. The Sinclair Oil & Gas Co. had petitioned the commission to raise the allowable production of the field by 50,000 barrels daily.

The price reduction was the result of numerous price postings by independent refining companies in Kansas, Oklahoma and Texas. In the statement announcing the reduction, R. S. Ellison, Stanolind president, said:

"For some time past we have known that competing com-

Summary of Crude Price Changes

ASHLAND, KY.—March 6, Ashland Refining Co. cut Somerset, Ky., crude 28 cents, to 75 cents per barrel.

CHICAGO.—March 5, Dixie Oil Co. reduced Muskegon, Mich., crude in amounts ranging from 22 to 40 cents.

LOUISVILLE.—March 7, Stoll Oil Refining Co. cut Oil City, Ky., crude 10 cents to 70 cents.

FINDLAY, O.—March 6, Ohio Oil Co. cut Central States crude 20 to 50 cents.

CHICAGO.—March 5, Stanolind Crude Oil Purchasing Co. cut Oklahoma, Kansas, North and North Central Texas crude in amounts ranging from 22 to 40 cents.

DALLAS.—March 5, Magnolia Petroleum Co. met Stanolind's price reductions in Oklahoma, Kansas, North and East Central Texas.

TULSA.—March 5, these crude purchasers met Stanolind's Mid-Continent cut: Standard Oil Co. of Kansas, Continental Oil Co., Mid-Continent Petroleum Corp., Eason Oil Co., White Eagle Oil & Refining Co., and Tidal Oil Corp.

TULSA.—March 10, Carter Oil Co. met Stanolind's crude cut in Oklahoma and Kansas.

CASPER.—March 5, Midwest Refining Co. cut Salt Creek, Wyo., crude in amounts ranging from 22 to 37 cents. It also cut other Rocky mountain crudes 35 cents.

FINDLAY, O.—March 5, Ohio Oil Co. cut Rocky Mountain crude 35 cents.

LOS ANGELES.—March 10, Union Oil Co. of California initiated cut ranging from 5 to 80 cents on grades of California crude it buys.

SAN FRANCISCO.—March 10, Standard Oil Co. of California met Union Oil Co.'s cuts on California crude, which amounted from 5 to 80 cents.

TULSA.—March 10, The Texas Co. met Stanolind crude cut in Oklahoma only.

HOUSTON.—March 10, Humble Oil & Refining Co. cut North and North Central Texas crude 12 to 40 cents; Texas Panhandle crude, 5 to 17 cents; West Texas, 15 to 39 cents; south and southwest Texas, 15 to 30 cents; and New Mexico, 10 to 34 cents.

NEW ORLEANS.—March 10, Standard Oil Co. of Louisiana cut North Louisiana-Arkansas crude 22 to 40 cents; Smackover, 25 cents; and Bellevue, 55 cents.

OIL CITY, PA.—March 10, Joseph Seep Purchasing Agency reduced Corning, O., crude 25 cents, making new price 90 cents per barrel.

panies were buying large quantities of crude oil at prices very substantially less than we were paying. Reliable information indicates that such cut-price buying has reached the staggering amount of more than 100,000 barrels a day. We can no longer ignore this condition. The products of this cheap crude are being used by purchasing companies or their customers in competition with our customers. It is fundamental that no company can afford to pay more for its raw material than its competitors pay and we must, in consequence, meet the prices established by our competitors."

Immediately upon receipt of the news that Stanolind had reduced the price, Gov. Murray went into action and called upon the chairman of the corporation commission to rescind that body's action. It complied, peculiar as the move seemed, and restored the allowable for Oklahoma City that had prevailed from Feb. 10. The commission is an elective body and its acts are not subject to review by the governor; nevertheless, his political prestige is such that he is pretty well having his way.

This done, the governor wired President E. G. Seubert, of the Standard Oil Co. of Indiana, asking the price be restored. Said the governor:

"You are advised that at my request on this date corporation commission of this state entered its order revoking the order made on yesterday increasing the allowable oil and other matters in entirety and hold the same in abeyance until a later date. It appears that the action of your company in establishing a new posted price on oil of this state was by reason of the action of said commissioners in making such order.

"Such action by your company will have a disastrous effect on the whole industry of this state and your efforts to stabilize the matters in the oil producing states. The matters will be discussed at the conference of the oil states committee at Texarkana, March 9. I urgently request that your company immediately place in effect an order revoking your order of March 4 and that the price of oil remain as of prior to that date. Will use my best effort and offices to prevent if possible your competitors from securing oil at reduced price."

Mr. Seubert, in replying to the governor, asserted that the increase in Oklahoma City's allowable production was not the influence that brought about the price cut. He said:

". . . . The economic situation forced us to cut price of crude oil as our action was taken after weeks of deliberation before we knew of your commission's order increasing the allowable output of your state. The impelling reason was that in the face of overproduction, there is excessive drilling and constantly increasing willingness on the part of producers to accept lower prices. Our competitors have taken advantage of this situation and are now buying more than 100,000 barrels of crude daily, much of which is from your state, at prices below those we have been paying. These companies or their connections are using this cheaper crude to compete with us in selling finished products.

"Crude oil buying must be on an equal basis. There cannot be one scale of prices for one group of companies and another for their competitors. It is obvious we cannot pay more for crude than our competitors and meet their prices in wholesale and retail markets and equally obvious we cannot expect our patrons to pay more for our products than they pay our competitors.

"Domestic production is responsible for the entire situation. We are in sympathy with your effort to improve the situation and sincerely desire to cooperate in every reasonable way. We will gladly pay more for crude the moment other purchasers are willing to do so, but nothing short of

(*Continued on Page* 22)

The Editors' Viewpoint

Continue the Marketing Code Regardless of the Commission

THERE is no question but that the oil industry wants to continue to follow its standards of good business practice, better known as the code of ethics.

This was made clear by the sentiments expressed at the meetings at Chicago last week to determine what to do now that the Federal Trade Commission has withdrawn its approval of the code.

There is no reason why the oil industry should not continue to approve and follow these standards of good practice. There is no unlawful agreement involved. On that point every lawyer in the industry seems to be agreed.

This whole movement to improve the thinking of the oil industry is purely one of education. The industry is teaching itself better business methods. If that is illegal, then the government, to be consistent, will have to shut down on all forms of education.

If the government thinks this vast business educational movement is illegal, and it involves a dozen industries, then the sooner the question is tried out in the courts the better. The oil industry will be doing the country and mankind in the future a great good by standing its ground and bringing the question up now for an immediate answer. There has been too much rattling of sabers and loose thinking and talking about violations of the anti-trust laws, all to the end of coercing business by the incompetents who manage to wriggle into office.

Furthermore, in the present emergency, the last governmental agency whose opinion should be taken on a legal matter is the Federal Trade Commission. Almost from its inception it has been notorious for the poor kind of law it has expounded. Nor has it always been fair, or honorable, or even truthful. The present members seem to be above some of their predecessors in this respect, but the way in which the present commission has treated the oil industry in withdrawing approval of the code without a single second of notice, shows that the present members cannot be very far above some of its past personnel.

Withdrawing that approval without notice was unfair, unjust and an utterly cowardly thing to do. It cannot be excused on the ground it was an oversight. A matter of that importance was not left to a couple of dumb stenographers. The commission, presumably, was afraid of a threatened investigation by Congress, and of criticism by the professional business baiters of those halls of trying to help business. So it just up and tossed the whole affair out the window. The commission evidently did not have the intelligence or courage to stand its ground against the rabble on the hill. Such downright cowardice cannot command the respect of even the rabble the commission presumably is running away from.

Now the industry will try to negotiate with the commission for a continuation of its approval of the code in whole or in part. We hope the industry's committee will be successful. If it is not, then we hope the industry will go ahead anyway, which is the only course that lies in the interests of both the industry, its customers and the public.—W. C. P.

Wolves in Sheep's Clothing

WE MEAN no disrespect in the word "sheep." But the word "wolves" you may displace with anything you may happen to have in any language that will express your feelings.

What we have in mind are the fine oil companies whose lubricating oil brands are nationally and well advertised, who let a lot of "gyp artists"—price cutters, etc.,—use their signs and their oils and their national advertising to convince the public that they are reputable, honorable concerns.

The fine oil companies are the sheep and the gyp artists are the wolves.

Reports that come to us are that this price cutting gentry who at the moment happen to be in the oil industry, have in front of their stations—in fact all about them and over them —the signs and the goods of the nationally advertised brands of motor oils—good oils made by good refiners.

For the most part there is no question that what brings customers into these stations is the reputation and high standing of these refiners. We may be permitted to hazard a guess that, without these signs of respectability and these products of quality, these garages and one-horse service stations probably would have trouble getting any number of the unwary public into their driveways.

All of the owners of these fine nationally advertised brands of motor oils, are signers of the code and in their own controlled outlets we know, live up to the letter of the code. In meetings of the code committees, they lend every effort to the enforcement of the code.

BUT, there are thousands of their uncontrolled outlets today that are doing all they can to reduce the gasoline price to zero—and they could not do the latter to any such extent unless they had the benediction of the signs of these national brands.—W. C. P.

(*Continued from Page 20*)

fair and united action by all producers in all the big producing states will overcome the present situation. Our obligation to the consuming public requires us to follow these economic conditions in spite of our sympathy. We will welcome earliest assurance of improved conditions and hope the meeting March 9 may mark the turn."

Mr. Seubert's statement was not such that would stop the debate. His remark that domestic production alone is responsible for the trouble is counter to the assertions of the group that is attempting to get tariff or embargo relief. They have maintained that the depressed condition of the domestic industry is caused by imports.

Companies that met the reduction posted by the Stanolind, were Continental Oil Co., Mid-Continent Petroleum Corp., White Eagle Oil Corp., Tidal Oil Co., Anderson-Prichard Oil Co., Eason Oil Co., Standard Oil Co. of Kansas, Wilcox Oil & Gas Co., Producers Oil Co., Rock Island Refining Co., Black Gold Refining Co., Western Refining Co.

Magnolia Petroleum Co. posted the same schedule on Oklahoma, Kansas and all fields of Texas where it buys on gravity basis, which comprise North and East Central Texas except that it began with lower grades, as follows:

Below 26°, 40 cents; 26-26.9, 41 cents; 27-27.9, 42 cents; 28-28.9, 43 cents; 29-29.9, 45 cents and from there on, following Stanolind's schedule, a two-cent differential between degrees gravity to 40° and above, and 67 cents.

Sinclair Refining Co., which recently posted a 67-cent price in Oklahoma City, offering to buy 50,000 barrels daily at that figure, met the price of the Stanolind in Oklahoma City only, as of March 6. The 67-cent price, in view of the cut, was out of line, as that is the price for 40° and above while Oklahoma City production falls around 38° and 39°. The company reiterated its offer to buy 50,000 barrels daily. It has a better chance of getting what it wants, now that the price has dropped.

Prairie Oil & Gas Co., which does not now post a price, will follow the Stanolind schedule in paying for royalty oil and making settlement on oil it exchanges with other producing-purchasing companies.

Three important buyers, the Humble Oil & Refining Co., The Texas Co., and Carter Oil Co. had announced no changes in their prices up to noon, March 9.

Texas Governor Protests Cuts To Hoover, Rockefeller, Jr.

HOUSTON, March 6

FEAR was expressed by Governor Ross S. Sterling in telegrams sent President Hoover and John D. Rockefeller, Jr., that solution of the oil problems of southwestern states would be upset by the crude oil price reductions March 5 by Stanolind Crude Oil Purchasing Co. and met by several other large purchasers. These cuts affected crude in Oklahoma, Kansas, and Texas except the Panhandle, West Texas, south, southwest and Gulf Coastal Texas.

"You are familiar," Governor Sterling told President Hoover, "with the critical oil situation in Mid-Continent fields and the efforts being made by the states affected to find a solution of the problem and work out some uniform program.

"Standard of Indiana has just announced a crude price cut in this territory. I fear this will upset the entire program. I felt I should call the matter to your attention for your consideration and such helpful action as you may find possible to take."

To John D. Rockefeller, Jr., the governor of Texas wired:

"I have just learned of a drastic crude price cut by the Standard Oil Co. of Indiana. I am actively working in conjunction with the governors of other states to find a solution of the oil industry's distressing problem and to adopt some uniform program if possible.

"An extremely critical condition exists in Oklahoma, where a determined effort is being made in the legislature by certain interests to repeal or seriously cripple all conservation statutes and destroy conservation and production control machinery.

"The Kansas legislature is now considering a conservation bill which, if adopted, will permit proration. The Texas legislature is now in session.

"I fear Indiana's price cut will upset the entire program and defeat all efforts to save from ruin the oil industry in these states, and the hundreds of thousands of our people directly and indirectly engaged therein.

"I am the more deeply concerned about this matter because the oil industry is so closely entwined with our whole economic structure that disaster to it necessarily will react injuriously to every industry in our state.

"You are reputed to be the largest stockholder in the company and are interested in the welfare of the oil industry and the people, hence I present this situation for your most earnest consideration, hoping that the cooperation of your company may be secured and an opportunity be had to find a way out of a most serious situation."

A week previous to the latest price reductions, independent buyers in the Wichita Falls district had posted prices of 43 cents a barrel for 29 degrees, A.P.I. gravity crude, to 65 cents for 39 degrees gravity, in some cases, and similar low prices in others. In the Gregg-Rusk district of East Texas contract crude has sold as low as 32 cents a barrel and independent buyers shipping from railroad loading rack facilities have been posting 40 cents a barrel.

East Texas crude, testing 39-40 degrees, A.P.I. gravity, sells more cheaply, all factors considered, than either the Oklahoma City or Wichita Falls district grades.

West Texas and the Panhandle district were not included in the new schedule as met by the Magnolia Petroleum Co. Stanolind does not buy in either region and other major purchasers had not met the Stanolind reduction in Texas at the time this was written.

Defeat of Kansas Proration Measure Indicated

TULSA, March 7.—Defeat of the Carpenter bill to provide for proration of Kansas fields was indicated Friday night when the Senate Committee on oil and gas, by a four to two vote, reported unfavorably on the measure. The bill had passed the House by an overwhelming majority.

The Senate committee also killed two other bills designed to prevent waste of oil and gas. The Carpenter bill was modelled on the Oklahoma law.

The Oklahoma legislature reached no action on the Cham Jones bill, in the House, which would repeal the present conservation-proration laws and substitute therefore a statute prohibiting waste. A companion measure is before the Senate. In the House extended hearings have been held, equal time being given to those who favor continuance of proration and to the opponents. The committee has not reported on the bill.

A new bill was introduced in the Senate Saturday which specifically exempts from proration wells making 20 barrels or less, prohibits waste of gas, provides that pipeline companies affiliated with producing companies shall take a ratable amount of oil from other producers and provides that the same percentage of proration shall be applied to all pools.

Governor Murray said during the week that he would favor the enactment of a law levying an additional one-twentieth of one per cent gross production tax to pay for the administration of proration, including the employment of umpires. Much criticism has been directed by opponents of proration at the custom of the state appointing umpires whose salaries are paid by the oil companies.

Oil State Governors Confer On Relief Measures

By Telegraph

HOUSTON, March 9

REPRESENTATIVES of oil state governors gathered in Texarkana, March 9, for the second conference called by Governor Murray, of Oklahoma, to construct a uniform plan of crude oil conservation and bring about improved industrial conditions.

While the conference was a closed meeting, Cicero Murray, who represented Governor Murray, speaking over the radio from KWKH, in Shreveport, the same evening, said great progress had been made toward working out relief measures for independent producers.

He said it had been decided at the conference that all the oil states should have conservation laws patterned after those of Oklahoma and Texas. It was proposed, he said, that the major producing states have their own conservation commission and that, in addition, there be a general oil states conservation committee, which would function to allocate allowable maximums of production for individual states. This program is in line with the interstate compact of oil producing states which has been fostered by Secretary of the Interior Wilbur.

The Texarkana conference, so said Cicero Murray over the radio, would ask federal sanction to a plan to eliminate reckless drilling. He said another plan was to ask the individual state to enact laws declaring imported oil contraband, in case the federal government took no steps to limit importation of oil products.

Reports from Oklahoma City said Murray was going ahead with his plan of having that state's legislature pass on his proposal to ban all importers of crude oil from doing business there. His brother, Cicero Murray, represented the Oklahoma governor at the Texarkana conference.

After the original governor's conference in Fort Worth, a week ago, it was said representatives of other states than Oklahoma did not look with favor on the proposed legislative ban, although they joined in a message to President Hoover seeking federal aid in the limitation of imports.

Robert R. Penn, vice president of the American Petroleum Institute's Production Division and chairman of the Central Proration Committee of Texas, represented Governor Sterling at Texarkana, over the protest of east Texas anti-prorationists headed by Carl Estes of Tyler. Replying to Estes' protest against Penn serving Sterling wired the Tyler newspaperman his complaint "seems more of a personal matter between you and Mr. Penn."

Other accredited representatives to the Texarkana conference included T. H. Barton, president of the Lion Oil & Refining Co. of Eldorado, representing Arkansas; W. Scott Heywood, of Jennings, representing Louisiana; Carl N. Cox, of Cheyenne, representing Wyoming; William H. Cooley of Bakersfield, representing California, and A. M. Landon, of Independence, representing Kansas.

Mr. Landon advised he could not serve but that a substitute would be appointed. Governor Arthur Seligman, of New Mexico, did not send a delegate but wired sympathy with the purposes of the meeting. Ohio declined to send a representative.

Calif. A.P.I. Chapter To Meet March 20

LOS ANGELES, March 6.—Final arrangements have been completed for the annual meeting and dinner of the Pacific Coast District of the A.P.I. Production Division to be held at the Engineers Club, Los Angeles, Mar. 20.

The meeting will be presided over by District Chairman A. H. Bell, and the program will include election of officers and the presentation of three papers.

A. F. Wilson, Standard Oil Co., will discuss "Recent Developments in Oil Well Foundations and Drilling Machinery." This is a subject that is extremely interesting at the present time due to the many recent developments in derrick and machinery design caused by deep drilling and heavy pressures encountered at Kettleman Hills and other California fields.

R. A. March, Shell Oil Co., will present a paper on "Design and Installation of Gas Traps and Vapor Systems" and will be followed on the program by P. S. Magruder, General Petroleum Corp. who will discuss "Theoretical Consideration Involved in Multiple Traps and Vapor Recovery Installation." The subject covered by these last two papers is interlocking and the discussion of them will be held jointly.

Production Economics to Be Talked at A.P.I. Meet

DALLAS, March 9.—The Mid-Continent district of the American Petroleum Institute division of production will hold its regular spring meeting on March 27 at the Tulsa Club, Tulsa. The various economic aspects of oil production will be discussed principally.

Subjects and speakers on the program are:

"Legal Aspects of Oil and Gas Production," by James A. Veasey, general counsel, Carter Oil Co., Tulsa.

"Economic Aspects of Oil and Gas Production," by H. M. Stalcup, vice president, Skelly Oil Co., Tulsa.

"Plan for Better Utilization of Gas Energy in the Production of Oil," by J. R. McWilliams, production engineer, Skelly Oil Co., Tulsa.

"Unit Operation," by R. F. MacArthur, vice president, Barnsdall Oil Co., Tulsa.

District officers and advisory committee will be elected. R. W. Bond is now chairman, R. R. Hawkins, vice chairman, and E. L. Bell, secretary, with headquarters in the Kirby Bldg., Dallas.

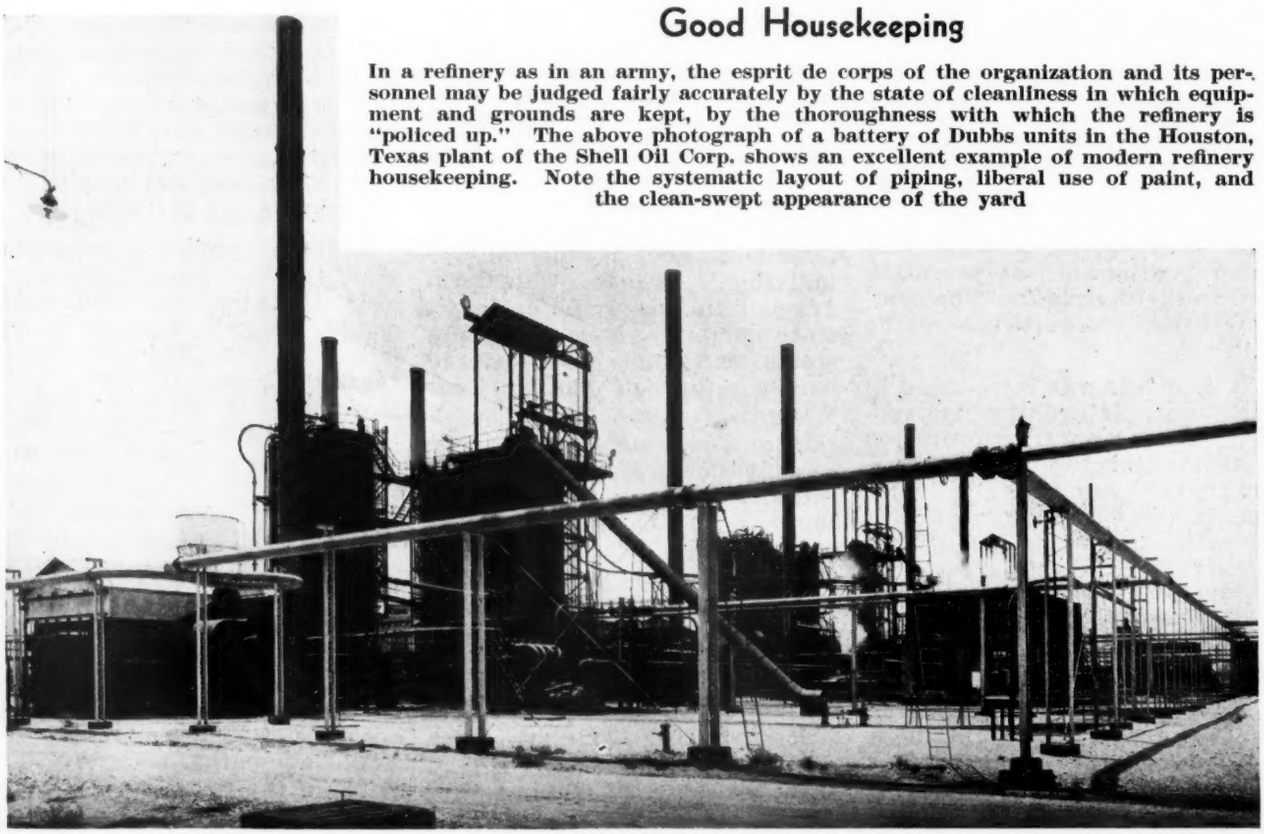
Merge Drumright Gasoline Plant Operations

TULSA, March 7.—An indication that the natural gasoline industry may adopt the unitized operation practices occasionally found in the oil producing departments is to be noted in the action of the Powers-Quinlan Shell Petroleum Corp. interests at Drumright.

Here plants that have been separately operated by these companies have been merged, the operation turned over to one company, and the net profits to be earned from the operation of the plants under one management will be distributed equitably, after a percentage for operating overhead has been taken out.

Good Housekeeping

In a refinery as in an army, the esprit de corps of the organization and its personnel may be judged fairly accurately by the state of cleanliness in which equipment and grounds are kept, by the thoroughness with which the refinery is "policed up." The above photograph of a battery of Dubbs units in the Houston, Texas plant of the Shell Oil Corp. shows an excellent example of modern refinery housekeeping. Note the systematic layout of piping, liberal use of paint, and the clean-swept appearance of the yard



Rails Prepare to Move 200,000 Barrels Daily from East Texas Fields

By Paul Wagner

N. P. N. STAFF WRITER

HOUSTON, March 6

RAILROADS serving the new Gregg-Rusk district of East Texas are reported preparing to handle as much as 200,000 barrels of crude oil daily in tank car shipments. Early in March shipments from this territory were about 75,000 barrels daily.

Operators without other outlets for crude—all who have not made contract sales at the wells—are building short pipelines to tank car loading racks as fast as they gain production.

Two railroads are participating principally in present traffic, the Texas & Pacific and the International-Great Northern (Missouri Pacific). The Santa Fe and Cotton Belt will also be factors in the future.

Freeman W. Burford and associates, operating as East Texas Refining Co., with plants under construction near Henderson and Longview, will have Santa Fe connections for shipments out of Longview. The Houston Oil Co. of Texas, producing in partnership with Edwin M. Jones in the Kilgore area, will make tank car loadings for its Camden, Ark., refinery via the Cotton Belt at Tyler.

East and west bound shipments from the Longview district to Shreveport, New Orleans, Fort Worth and Dallas get a one-line haul over the Texas-Pacific. South to the Gulf Coast and north toward St. Louis the International-Great Northern provides similar service.

The three areas of production in the Gregg-Rusk district—Longview, Kilgore and Joiner—moved into crude consuming channels March 4 what was then its high mark of exploitation. A total of 74,634 barrels was moved, 39,245 barrels from the Joiner area and 35,389 barrels from Kilgore and Longview.

Humble Oil & Refining Co. was moving between 11,000 and 12,000 barrels daily over the I&GN out of the Kilgore area, 18 miles south of Longview production and nine miles north of Joiner area development; Arkansas Fuel Oil Co., was moving approximately 5500 barrels daily from Longview to Shreveport over the Texas & Pacific. Sinclair Oil & Gas Co., was handling approximately 6000 barrels daily to Houston over the Henderson-Overton branch of the Missouri Pacific system and the affiliated I&GN. These constituted the three major shippers.

Virtually all other shipments were made by owners of short line gathering systems, either loading tank cars from facilities connected with their own wells or purchasing crude for handling through similar facilities.

THE Missouri Pacific system is said to be preparing to handle shipments totalling 100,000 barrels daily and the Texas & Pacific took care of shipments reaching 75,000 barrels daily from the Winkler field, West Texas, at its peak. The Cotton Belt and Santa Fe systems are credited also with active bids for increased business with the prospect that the territory will not lack for tank car outlets.

Trunk pipeline facilities, meantime, continue lagging; reflecting the unwillingness of most major operators to become common purchasers in a territory where proration has not been adopted.

Gulf Pipe Line Co., whose Oklahoma-to-Port Arthur trunk system is within a few miles of the district, is making ready to build an 8-inch connecting link into the territory, which probably will be connected to its own solidly blocked properties in the district.

Humble Pipe Line Co. continues to make tank car shipments from the Kilgore area after shutting down work on its 13-mile spur from its Van-to-Louisiana trunk system.

MAGNOLIA PIPE LINE CO., continues work slowly on its 60-mile line connecting the district with its Louisiana-to-Gulf trunk system, which was originally announced as an outlet for common carrier and contract shipments rather than purchased oil.

Arkansas Fuel Oil Co., subsidiary of Cities Service Co., which ships crude from Longview on a seven-cent rate to Shreveport, is holding up work on a 70-mile pipeline for which right-of-way was recently obtained.

Dispatches from Youngstown tell of the placing of an order for 265 miles of pipe for a system connecting the East Texas district with Oklahoma facilities of a major company. This apparently confirms the previously announced[1] intention of the Sinclair Texas Pipe Line Co. to build from the Gregg-Rusk district northwest to connect with its Oklahoma City-Coffeyville trunk.

The Atlantic Pipe Line Co., which now operates a trunk system from Atlantic Oil Producing Co. properties in West Texas to Beaumont, is said to be negotiating for a line approximately 210 miles long from the Longview area to the Atlantic's Atreco terminal in

[1] NATIONAL PETROLEUM NEWS, page 40, March 4, 1931.

the Beaumont district, in conjunction with the Yount-Lee Oil Co., should the latter conclude negotiations for the interests of W. A. Moncrief, J. E. Farrell and others in the Gregg county discovery area, northwest of Longview.

The Moncrief-Farrell and other properties were at one time under consideration by the Sinclair interests and later with the Arkansas Fuel Oil Co., owners of part of the original Farrell block. In both cases the pending deals fell through.

Atlantic Pipe Line Co., recently purchased the Mills Bennett short line from Barbers Hill, South Texas, to Gulf Coast ocean terminals and afterwards took over the Moody-Seagraves & Morgan facilities at Refugio, in the Corpus Christi district, indicating its demand for fresh crude supplies in the southwest.

In view of the policy of the Prairie Oil & Gas Co. Jan. 1 withdrawing from purchase and transport of crude from north and central Texas properties, operators find it hard to reconcile the statement that Pure Oil Pipe Line Co. of Texas, a wholly owned Prairie subsidiary, has surveyed for an 80-mile system connecting the Rusk area with its Teague station, near Mexia.

The Texas Pipe Line Co., which owns virtually no acreage in the East Texas district, had plans for a 70-mile line from the Gregg-Rusk area to its Louisiana-to-Port Arthur trunk, near Nacogdoches. General Jacob F. Wolters, its attorney, announced at Austin this week that construction was being held up pending the outcome of legislation believed inimical to pipelines.

Were The Texas Pipe Line Co. system to be connected into the area it would be to make general purchases, since the company's production interests have little here in the form of measurable future supplies.

"We were ready to build," General Wolters said with regard to proposed legislation limiting pipeline profits in Texas to 10 per cent on the company's investment, "although we had no production there. I won't say that we won't build if the bill is passed, but if it is then we want to have a look first."

Counter Attack Made on Independent Group

HOUSTON, March 7.—Motives of independent oil operators sponsoring the disintegration bill to divorce gasoline sales from other branches of the petroleum industry were attacked in a statement of Representative J. R. McDougald before the Texas legislature, March 6, at Austin.

"The so-called war on the major oil companies stands clearly revealed," he said, "as an effort by a very small group to have certain things done for its special benefit, of which the prospect has already created alarm to tens of thousands of working people and small investors."

Representative McDougald charged that 10,000 persons in the Port Arthur refining district would be thrown out of employment by passage of the proposed legislation.

Pipeline from East Texas To Shreveport Planned

SHREVEPORT, March 7.—Formation of the Atlas Pipe Line Co., Inc., and its subsidiary, the Spartan Refining Co., Inc., to acquire the properties of the Shreveport-El Dorado Pipe Line Co., Inc. and the Shreveport-El Dorado Refining Co., Inc. has been announced here. The corporation will have assets of approximately $6,000,000.

The Atlas Pipe Line Co., Inc. will construct an 8-inch pipeline from the new East Texas fields to Shreveport. Work on a part of the line already has been started. The refinery at Shreveport will be operated on the East Texas crude, and it is likely other refineries in the Shreveport vicinity will obtain at least a portion of their crude requirements from the line, which will have a capacity of approximately 18,000 barrels a day.

All details of the new corporation have not been worked out, but E. R. Ratcliff, who organized the old Louisiana Oil Co., now the Louisiana Oil Refining Corp., recently acquired by Cities Service, will be president. Since Mr. Ratcliff sold his interests in 1922, he has been active in other phases of the oil industry.

S. D. Hunter, another Shreveport capitalist, will be vice president and chairman of the board. Mr. Hunter is an independent oil and gas operator who had considerable success in the Monroe and Zwolle areas.

B. H. Gray will be vice president and treasurer. He was formerly vice president, general manager and treasurer of the Shreveport-El Dorado Pipe Line Co. J. F. Atkins, former president of the pipeline company, will be secretary. The board of directors will be composed of J. K. Wadley, Texarkana lumberman and capitalist; J. W. Olvey, El Dorado, R. T. Moore, Guy Oakes, W. C. Woolf, C. D. Keen, J. B. Beaird, J. S. Reilly and William L. Chrisman of Shreveport.

As far as could be learned no changes were contemplated in the refinery. The refinery for some time has specialized in anti-knock gasolines, but with the change in operations to run East Texas crude, the company undoubtedly will have U. S. Motor and 400 end point gasolines to offer the trade.

Five Companies Will Buy «Stripper» Oil

TULSA, March 7.—At a meeting of crude oil purchasing companies called by Gov. Harry Woodring, of Kansas, held in Topeka, March 5, agreements were made by five companies to take regularly 4300 barrels daily of the distress "stripper" production from some 20 Kansas counties.

Standard Oil Co. of Indiana agreed to buy 2000 barrels daily; Sinclair Refining Co., 1000 barrels; Empire Oil & Refining Co., 750 barrels; Standard Oil Co. of Kansas, 300 barrels and Skelly Oil Co., 250 barrels.

The amount the Standard of Indiana agreed to take is in addition to that which it is now buying in southern Kansas.

Committee Appointed to Petition For Retention of the Code

By Roger B. Stafford
N. P. N. STAFF WRITER

CHICAGO, March 5

WHY the marketers of a large proportion of the gasoline sold in the United States believe the Federal Trade Commission should reconsider and rescind its order to reject 18 of the 21 rules of the code of practices for the marketing of refined petroleum products, will be told the commission by a committee of five men who were appointed by E. B. Reeser, president of the American Petroleum Institute, at the general conference on marketing held here March 4.

Members of the committee are: Roy B. Jones, president, Panhandle Producing & Refining Co., Wichita Falls, chairman; Henry M. Dawes, president, Pure Oil Co., Chicago; L. L. Stevens, general counsel, Standard Oil Co. of Indiana, Chicago; E. S. Hall, counsel, Standard Oil Co. (N. J.) New York, and William R. Boyd, Jr., executive vice-president, American Petroleum Institute, New York.

An appointment will be sought with the commission at an early date. Meanwhile arguments will be drafted by the committee to tell the commission why a majority of the marketing division of our industry wishes the code of practices retained in its present form.

Opinion was generally expressed at the general meeting of the A.P.I. marketing division that the code should be retained in its present form rather than to try to get a new code. In other words, it was considered better to try to keep what we have already had rather than to draft a new code and seek its adoption by the 17,000 signatories of the present code.

The general meeting March 4 attracted about 500 oil marketers, association men, and marketing company lawyers. E. G. Seubert, president, Standard Oil Co. of Indiana, presided. He is chairman of the A.P.I. general committee on marketing.

The meeting was devoted to the giving of testimonials in favor of the present code and of criticisms of lease and agency agreements or 100 per cent controlled outlets. Most of those who offered criticisms, explained it was the abuses of the lease and agency agreements rather than the lease and agency form of controlling outlets itself that made them apprehensive of the effectiveness of the code.

Mr. Seubert in opening the session said other industries were complimenting the petroleum industry on the effectiveness of its code. He recounted the events that led up to the adoption of the present code and told of the machinery that had been set up for the propagation of knowledge about it, and for its enforcement. He said rejection of the code by the Federal Trade Commission in its order of Jan. 30, 1931, came as a complete surprise to our industry.

Mr. Boyd read to the session the three recommendations made by the general committee on marketing. These recommendations were unanimously adopted by the institute's board of directors. They are in substance: 1, that an effort be made to retain the present code; 2, that the present code be kept in force until some solution of the code problem can be worked out by the commission or the industry, and 3, that a committee of five men be appointed to lay a plea for the code before the commission.

Mr. Boyd said that he didn't think the commission had been thoroughly informed about practices in the oil industry and that when thoroughly informed it would change its opinion of the industry.

He said the code represented what was believed by a majority of the industry to be that which could be enforced. He said he had received a great many letters complaining about the lease and agency agreements and 100 per cent controlled stations and read one telegram in which it was asked that the part of the code that enabled lease and agency agreements should be eliminated.

Mr. Boyd explained that the subject of lease and agency agreements had been considered in the drafting of the code but that a rule pertaining to it was not included because there was no general agreement concerning it.

"Unless the code is left standing the marketing division is headed for disaster," said Mr. Jones in opening a general discussion of the code

(*Continued on Page 30*)

Three Instead of Four

W. C. Teagle, president, Standard Oil Co. (N. J.) halted Richard Wotowitch who was headed toward committee room at the recent A. P. I. meeting in Chicago:

"What committee is meeting in there, Dick?"

Dick: "The committee on elimination of waste in marketing."

W. C. T.: "Tell them to recommend building only three service stations on a corner instead of four."

997,000-Barrel Increase in Gasoline Stocks in First Week of March

By Telegraph

NEW YORK, March 10

STOCKS of gasoline at refineries reporting to the American Petroleum Institute increased 997,000 barrels in the week ended March 7.

Total stocks on that date were 45,789,000 barrels at plants with 95.7 per cent of the total still capacity in the country.

In the previous week stocks increased 1,184,000 barrels bringing the total increase in the past two weeks up to more than 2,000,000 barrels.

On the basis of gasoline stocks at plants reporting to the institute, it may be estimated that total refinery stocks of gasoline in this country now approximate 47,000,000 barrels.

This is 7,000,000 barrels in excess of the 40,000,000-barrel recommendation for April 1 for the refining industry made by the statistical sub-committee of the institute early last winter.

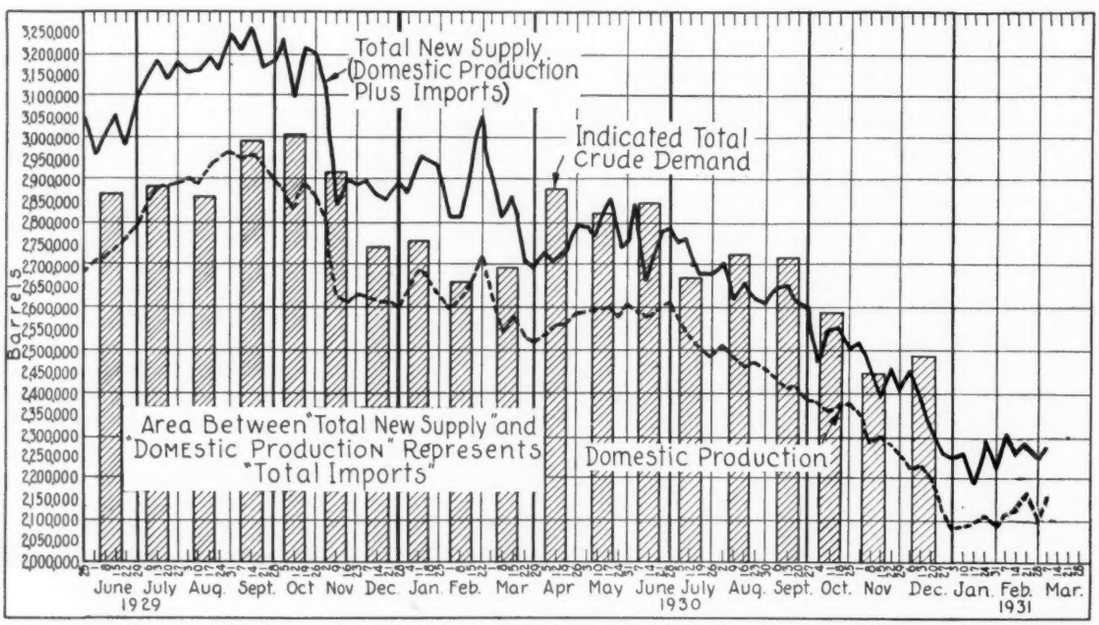
Unless there is an abrupt change in the volume of gasoline demand, or a further curtailment in crude runs, it appears likely that our industry may exceed the committee recommendations by from eight to ten million barrels.

On Feb. 28, 1930, gasoline stocks at U. S. refineries totaled 53,229,000 barrels. This was about 7,000,000 barrels more than refiners are estimated to have held in stock on Feb. 28 this year. Last year stocks increased 2,000,000 barrels in March to 55,239,000 barrels.

With an increase of nearly a million barrels in the past week it is apparent that the increase may be even greater in March this year than last. If the present rate of increase is maintained during the next three weeks total stocks would reach 50,000,000 barrels, only five million below last year's level.

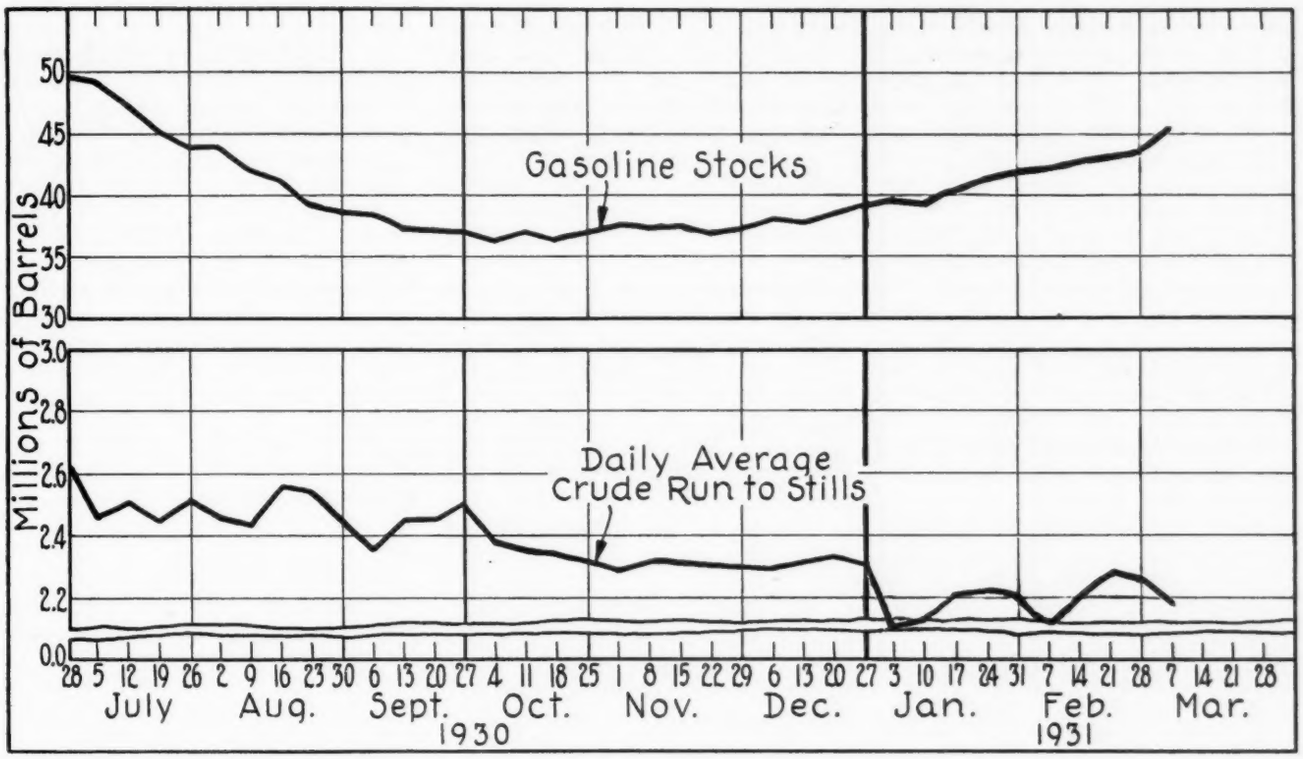
During early months of the winter refiners appeared to be following the institute recommendations quite closely. The record of the past few weeks, however, would indicate that individual executives have loosened their control on refinery runs. Unless this control is exercised again it appears likely that most of the good accomplished in the early winter months may be nullified.

In the first week of March the large increases in gasoline stocks were confined to the East Coast and Gulf Coast districts. Texas Gulf Coast refiners added 640,000 barrels of gasoline to stocks. Louisiana Gulf refiners added 93,000 barrels and East Coast plants 241,000 barrels.



This chart shows crude oil supply from week according to the American Petroleum Institute reports (solid line) in relation to indicated crude oil demand as taken from the Bureau of Mines monthly reports (shaded columns).

U. S. Crude Runs and Gasoline Stocks as Reported Weekly by A. P. I.



Small reductions in stocks were reported by Oklahoma-Kansas, Rocky Mountain and California refining groups. Substantial cuts in crude runs accounted for the stock reductions in Oklahoma-Kansas and California.

Texas Gulf and East Coast refiners are running at a higher rate, as compared with their capacity, than any other groups in the country. Texas Gulf plants utilized 82.8 per cent of capacity in the first week of March and East Coast refiners 73.9 per cent of capacity while the refiners as a whole were using only 60.8 per cent of capacity.

Domestic production of crude oil increased 55,800 barrels daily average in the week ended March 7, the institute estimates. Total production averaged 2,156,700 barrels per day.

The increase was due largely to the growing Gregg-Rusk area output in East Texas and to an increase at Oklahoma City. The Gregg-Rusk increase was 22,150 barrels daily average to 56,050 barrels per day. The Oklahoma City increase was 65,600 barrels daily average to 128,250 barrels per day.

Imports of crude dropped 37,715 barrels daily average to 126,500 barrels per day. Total new supply of crude increased 15,000 barrels, over the past week to 2,283,130 barrels per day.

Current Refinery Operations

Districts	Per Cent Capacity Reporting	Daily Average Crude to Stills (Barrels) Week Ended		Per Cent of Reporting Capacity Operated Week Ended		Stocks (Thousands of Barrels) Gasoline		Gas & Fuel Oil		Cracked Gasoline Production % of Total Capacity Reporting	Daily Av. Production (Barrels) Week Ended	
		Mar. 7	Feb. 28	Mar. 7	Feb. 28	Mar. 7	Feb. 28	Mar. 7	Feb. 28	Mar. 7	Mar. 7	Feb. 28
East Coast	100.0	452,600	440,000	73.9	71.8	8,180	7,939	7,085	7,300	90.3	75,700	76,100
Appalachian	93.8	92,700	96,300	70.0	72.7	1,512	1,480	1,052	1,096	94.6	16,700	19,400
Ind., Ill., Ky.	97.5	270,600	289,600	71.0	76.0	5,169	5,140	3,057	3,026	95.2	67,400	55,600
Okla., Kans., Mo.	89.4	221,000	247,700	53.6	60.1	3,236	3,245	3,777	3,757	90.0	46,700	49,600
Texas	91.9	544,800	546,400	73.3	73.5	7,920	7,290	8,319	9,421	95.9	98,600	107,000
La., Ark.	98.3	139,700	144,000	53.3	55.0	1,907	1,801	2,363	2,337	98.6	29,900	32,300
Rocky Mountain	93.1	37,600	37,400	26.9	26.8	1,840	1,851	851	893	100.0	11,300	13,900
California	98.8	413,100	464,700	46.5	52.4	16,025	16,046	100,924	101,315	97.8	39,100	38,400
Total	95.7	2,172,100	2,266,100	60.8	63.5	45,789	44,792	127,428	129,145	94.7	385,400	392,300
Texas (Gulf Coast)	100.0	438,600	433,600	82.8	81.9	6,670	6,030	5,980	7,057	98.5	83,400	87,600
La. (Gulf Coast)	100.0	94,400	98,700	64.0	66.9	1,684	1,591	1,308	1,266	100.0	20,600	24,600

(*Continued from Page 27*)

on the floor of the meeting. "The division is already in a chaotic condition. If the code is cut from under our feet, I don't know what will happen to us.

"I believe that if it were rewritten and changed we would have to start anew with the 17,000 marketers that have signed the present code. What we do here may bring a loss of thousands of signatories."

MR. DAWES said he was not apprehensive about the action of the Federal Trade Commission and saw no reason for discouragement. Mr. Hall concurred with him.

New advantages were foreseen by J. W. Carnes, Sinclair Refining Co., New York, if the code should be continued. It was singular to see the code operate so well, he said.

W. T. Holliday, president, Standard Oil Co. of Ohio, Cleveland, cited the statement in the Feb. 3 announcement of the trade commission's rejection order which pointed out that trade associations had codes of practices before the commission held code conferences. The approval of a code by the commission was a psychological matter, Mr. Holliday said. The code drew its authority not from the commission but from the industry itself, he asserted.

Mr. Holliday said he didn't, at the start, favor going to the Federal Trade Commission for approval. Nobody should be stampeded into the belief that the code is not a moral obligation, he advised. He said the industry above all else needs the open posting of prices. By not posting prices at which goods were sold and by making secret deviations from posted prices, the industry would be thrown into the hands of salesmen, he predicted.

"We need open prices so we can compete with ourselves rather than with old Mother Rumor," Mr. Holliday concluded.

C. F. Meyer, president, Standard Oil Co. of New York, indorsed what Mr. Holliday said and added it would be calamitous to throw the code away.

It is essential that the industry present a united front to the trade commission, warned H. T. Klein, general counsel, The Texas Co., New York. He said the lease and agency agreement was a constructive and stabilizing factor. He said it had not been prohibited in the code because a majority of the industry had not been in favor of prohibiting it.

The experience has been a happy one in seeing the code work so well, said J. C. Van Eck, president, Shell Union Oil Corp., New York. The code in practice has been a living force, Mr. Van Eck said. Although the industry is sick in regard to overproduction, he added, the fact that it has withstood the depression so well is a tribute to the code.

H. D. Collier, Standard Oil Co. of California, San Francisco, and chairman of the Pacific coast regional committee, said he believed the industry had not worked closely enough with the Federal Trade Commission. He said the code machinery precluded close working and that other interests had gone to the commission with complaints that gave the commission the wrong impression of the way in which the code was operating.

C. S. SHEFFIELD, Standard Oil Co. of New Jersey, New York, said the code had tended to stamp out suspicion and that he felt the Federal Trade Commission had no more right to try to kill the code than it had to try to kill the A.P.I. He is chairman of the eastern regional code committee.

L. S. Wescoat, Pure Oil Co., Chicago, said he had found about 98 per cent acceptance of the code in the middle west. The other 2 per cent, he said, consisted of those marketers who hoped to profit by not agreeing to it.

Other major company representatives who spoke in favor of the code and the way it has functioned, included: W. T. Atkins, Skelly Oil Co., Kansas City; M. G. Eitelman, Barnsdall Corp., Tulsa; C. S. Smith, National Refining Co., Cleveland; F. R. Coates, Cities Service Co., New York, Frederic Ewing, and H. A. Wilkinson, Standard Oil Co. of New York, New York, and E. P. Angus, Magnolia Petroleum Co., Dallas.

J. A. Motter, of the Kansas Oil Men's Association, Wichita, said one of the troubles in the operation of the code was that employes of major companies had not been educated in the code. Amos Ball, general manager, Standard Oil Co. of Indiana, said his company had instructed its field men to live up to the code. Mr. Seubert later urged that every marketing executive keep in close touch with his field organization.

SOME Michigan marketers attribute their 1930 profits to the code, said H. H. Ragle, president, Michigan Oil Men's Association. He said he had found that after 18 months' operation of the code early ringleaders in opposition to it had become ringleaders, in getting additional signatories.

W. D. Hudson, president, Tennessee Oil Men's Association, Clarksville, Tenn., and Alfred T. Levine, counsel of the association, Nashville, said Tennessee marketers were for the code 100 per cent. Charles M. Sutherland, Nebraska Independent Oil Men's Association, said most of the 759 marketers in Nebraska wanted the code. George S. Allee, Missouri Oil Men's Association, said that 95 per cent of Missouri's marketers were abiding by the code.

Hubert B. Fuller, counsel, Ohio Petroleum Marketers Association, Cleveland, said marketers that were at first skeptical of the code were now the most anxious that it be retained. He said some marketers who had expressed opposition to the code had expected it to protect them against narrowed margins and economic trends which it was not designed to do.

J. A. Simpson, Birmingham, Ala., attorney for the Alabama Oil Men's Association and Alabama code committee, said executives should see that field men follow the code. He added that he thought the Federal Trade Commission in rejecting the code was out of step with the modern trend. He said Alabama marketers favored continuance of the code.

Not a dissenting voice was heard against the code at meetings held in February in New Orleans, Dallas, Fort Smith, Ark., and Jackson, Miss., by F. E. Wilkerson, Louisiana Oil Refining Corp., Shreveport, he said.

Others who spoke in favor of the code were: Sam T. Hurd, Indiana Code Bureau; Robert E. Lee Coffey, Idaho association; J. C. Schoo, Arkansas code committee; R. J. Coughlin, Westland Oil Co., Minot, N. D., and T. O. Baucom, Jackson Purchase Oil Co., Murray, Ky.

Mr. Wilkinson of the Standard of New York suggested that a preamble be drafted for the code stating briefly the principles involved, and that the preamble be read at the opening of every meeting of oil marketers.

A transcript of the open meeting will be laid before the Federal Trade Commission.

Lease and Agency as Practiced Is Only Objection to Code

CHICAGO, March 5

CHIEF opposition to the present code of practices for the marketing of refined petroleum products as expressed inside and outside the general meeting of the marketing division of the American Petroleum Institute at Chicago this week, involved the abuses which have sprung up under lease and agency method of controlling outlets. The lease and agency was the only complaint lodged against operations under the code as it exists.

Officers of several state marketers' association asserted the lease and agency method tended to nullify the effectiveness of the code.

The Pennsylvania Grade Crude Oil Association advocated elimination of that form of operation.

The Pennsylvania association called a meeting of state marketer association officers at the Stevens hotel, where the institute was in session. Men who attended the meeting said the lease and agency was described as a conspiracy against the smaller marketers.

This meeting was presided over by J. M. Koch, Quaker State Oil Refining Co., Oil City, Pa. The case of the association was presented to the general meeting of the A. P. I. March 4 by Rodney J. Alexander, its secretary.

Mr. Alexander said his association, a signatory to the code, represented 900 producers of Pennsylvania grade crude oil, 27 refiners and more than 700 jobbers or distributors. His complaint, he said, was against the lease and agency, or 100 per cent controlled, account which had shut many of the members of his association out of outlets for their lubricating oils.

He charged that the lease and agency provided a cloak behind which major companies might function in a discriminatory manner.

It is understood that at least one complaint had been filed with the Federal Trade Commission about the lease and agency and that hearings on the complaint have begun. One of the charges, it is understood, is that major companies have induced dealers, whose stations they have leased, to break their sales contracts with manufacturers of Pennsylvania grade motor oils, thereby shutting out Pennsylvania oils from outlets.

IT developed at the marketing division meeting that a great many letters had been sent the institute and members of the general committee on marketing, urging that relief be granted from the 100 per cent controlled stations. Most of these letters came from Quaker State dealers and distributors, it later developed, and were sent at the request of the Pennsylvania association. The request had been sent to all its licensed jobbers and distributors of members' oils.

A. L. Lommel, president, Iowa Petroleum Association, told the general meeting that abuses of the lease and agency were doing much to nullify the good effects of the code in Iowa.

C. E. Bauer, president, Kentucky Oil Men's Association, which includes major companies in its membership, said the lease and agency was doing harm in his state. He said he believed that, if the 17,000 signatories to the code were canvassed, a majority would be found who opposed that method of outlet control.

The lease and agency is the complaint of the small marketers of Wisconsin, said H. A. Rohde, secretary of the Wisconsin Petroleum Association. Small marketers were unable to compete with that method of operation as written by the major companies in his state, he said. Consequently, he added, the code lost some of its effectiveness.

Some provisions of the lease and agency are grossly abused, said M. B. Whiting, Whiting Oil Co., Clifton Forge, Va., a member of the Virginia code committee. The lease and agency has put the industry in a position it could well have avoided, Mr. Whiting said.

An effort should be made to equalize the advantages and disadvantages of operation with the lease and agency agreements, said Paul G. Blazer, Ashland Refining Co., Ashland, Ky., who is chairman of the Ohio code committee. It is important that the scope of the lease and agency be limited, he added, so that the small jobber could operate on an equitable basis with the large

company. He said there was less objection to the method in Ohio, where the leasing of curb pumps and parking garage gasoline installations was prohibited, than in Kentucky and West Virginia. He is a member of the Kentucky and West Virginia code committees.

"It would be unfortunate if we attempted to abandon the lease and agency," he said, "but we should erase the unfair factors. The lease and agency in itself is a stabilizing factor, but unless the disadvantages are erased we may meet a situation more serious than it is at present."

G. A. Primm, secretary of the Illinois Petroleum Marketers Association, said the lease and agency rentals coupled with the quantity discounts, had brought long margins and bad conditions into Illinois. He asked if the institute knew what induced the Federal Trade Commission to reject 18 of the 21 rules of the present code and suggested that the long rentals paid for stations might have had something to do with it.

The lease and agency method has been upheld as legal by the Supreme Court of Nebraska in the case of Lincoln Oil Co. versus Devigny, said Charles M. Sutherland, secretary of the Nebraska Independent Oil Men's Association. Only weak marketers have not taken advantage of the lease and agency in Nebraska, he commented.

Since the code went into effect the leasing and loaning of all equipment has been abolished in Montana, R. J. Coughlin, Westland Oil Co., Minot, N. D., told the meeting. The lease and agency will take care of itself, Mr. Coughlin predicted, those that are paying too great rentals or doing other uneconomical things will realize it and will have to stop it.

Alfred T. Levine, counsel for the Tennessee Oil Men's Association, Nashville, discounted the talk of a major company conspiracy against the smaller marketers. Speaking of the meeting of state association officers called the day before, he said:

"I didn't say anything yesterday. It was awfully hard for me to sit around and not say anything. I just thought if I could tell some of those people the confidences I have had from representatives of major companies—in which one spoke not overly complimentarily of another in regard to certain details—they would conclude with me that, if the major companies are working together, a great many of their high executives would make much higher salaries as actors than they would as executives of oil companies.

"Down in Tennessee if a man's truck has any trouble with its carburetor he threatens to resign from the code. It hasn't anything to do with it. The code is a gesture of a group of men engaged in a great industry endeavoring to stabilize an ethical standard upon which to operate. The proper independent, the real type of Independent, is accorded every type of courtesy by those he comes in competition with."

H. T. Klein, general counsel, The Texas Co., New York, who helped to draft the code and steer it through its course to final approval by the trade commission, said oil company lawyers were opposed to elimination of the lease and agency but rather favored its extension because it enabled companies to control the practices of their agents. The lease, he said, gave a company control over a property like purchase.

"Before we can eliminate the lease and agency," Mr. Klein said, "we would have to get unanimous agreement to eliminate it."

W. R. Boyd, Jr., executive vice-president of the American Petroleum Institute, in explaining the institute's position, said the A. P. I. provided only a neutral ground for the presentation of views and ideas. The A. P. I. cannot rewrite the code, he said. After the industry reaches an agreement on anything the A. P. I. can undertake to put it into effect nationally.

The immediate problem, Mr. Boyd explained, was to get a reinstatement of the commission's approval of the code. At some future time, he said, the industry might attempt to get changes into it.

Federal Oil Board Names Economics Committee

WASHINGTON, March 9.—Supply and demand factors in the petroleum industry in the six-months period beginning April 1 will be surveyed by a voluntary committee on petroleum economics of the Federal Oil Conservation Board. The committee has been appointed by Ray Lyman Wilbur secretary of the interior and chairman of the federal board, at the request of the American Petroleum Institute.

E. B. Swanson, chief economist of the U. S. Bureau of Mines, is to be chairman of the committee. Members will be John W. Frey, Bureau of Foreign and Domestic Commerce; Martin Van Couvering of Los Angeles, petroleum engineer; Alfred G. White, National Industrial Conference Board, New York; and Howard Bennette, Western Petroleum Refiners Association, Tulsa.

Two similar reports were made in 1930 by a former committee of the board. That committee estimated crude oil requirements of the country by an analysis of prospective consumption of gasoline.

A.P.I. Directors Endorse Hoover Traffic Code

CHICAGO, March 5.—The board of directors of the American Petroleum Institute indorsed the Hoover code of motor traffic control at its meeting here this week. The code provides for uniform state laws pertaining to truck operation, truck sizes, weights and other items involved in automotive transportation.

The committee on automotive transportation of the institute, of which J. F. Winchester, Standard Oil Co. of New Jersey, is chairman, recommended that installation of meters on gasoline tank trucks not be made compulsory but left to the option of individual marketing organizations.

Alemite Enters Motor Oil Field; Veedol Now 100% Pennsylvania

CHICAGO, March 6 ALEMITE CORP., manufacturer of high pressure lubrication equipment, and for several years distributor of automotive lubricants except motor oil, is entering the motor oil field. Alemite is one of three companies which are undertaking nationwide distribution of new brands of Pennsylvania grade oils. The other two are the Tide Water Oil Co. and the Shell companies.

Alemite will make its first public bow as a distributor of motor oils bearing its own brand name late this month in Miami, Fla., in time for its dealers to catch the northern-bound tourists. Introduction of Alemite oils will be made nationally in an advertising campaign which will begin early in June in the Saturday Evening Post and Collier's Weekly and large newspaper space in 85 cities. Meanwhile a dealer advertising campaign will be carried on in the automotive trade press.

The intention of Alemite to extend its lubrication line to include motor oils was announced to the Alemite distributor organization at a sales convention a few weeks ago in Chicago. That convention was addressed by John Rome Battle, lubrication engineer of Philadelphia.

The oil has a low pour test, indicating it is a Sharples processed oil. The refining process will be advertised to the trade and to the consumer as the "Alemite Process." In a booklet already off the press these eight points are advertised for the oil:

"1. Perfected by the new, exclusive 'Alemite Process' of refining.

"2. Rugged, full-bodied, extremely 'oily,' holding its body under severe driving conditions —sealing piston power with new efficiency and fighting bearing wear.

"3. Heat resisting! Extreme motor heats and high motoring temperatures will not harm its full lubricating quality.

"4. Cold resisting! No solidifying at intense colds. Full lubrication from the first turnover of your motor. No drag to wear down your battery.

"5. No wasteful evaporation or loss under high motor temperatures—no thinning out.

"6. Thoroughly freed from impurities that produce sticky valves and stick piston rings.

"7. Keeps your motor clean by minimizing carbon deposit.

"8 More power. More gas mileage. Because of reduced friction drag."

The oil will retail for 35 cents a quart, it was announced, and will bear the emblem of the Pennsylvania Grade Crude Oil Association. Alemite holds permit No. 97 of that association. This number indicates Alemite has been considering marketing a Pennsylvania oil for a long time as permits issued by the association lately bear numbers in the 700's.

The oil will be put out in five grades—20, 30, 40, 50, and 60 S.A.E. viscosities.

The oil, it was said, would be shipped direct to present Alemite distributors in drums and half drums from a refinery in Pennsylvania. The drums will be lacquered blue and yellow with lettering in red. The color combination is the same that has been used on Alemite grease containers. Highboys will also be placed with dealers. These will bear the same color combinations as the drums.

Bright metal parts of highboys pumps and pumps that will be supplied dealers with drums, will be chromium plated.

Alemite will also supply yard and sidewalk signs for dealers. These signs are keystone shaped, symbolic of Pennsylvania.

It is understood that dealers will be quoted a base price on the oil by distributors with discounts for quantity. The amount of other Alemite lubricants bought in a year will be considered in computing the amount of the discount on motors oils, it was said.

Like Alemite greases the marketing will be through car dealers' service stations, garages and individual filling stations. The wholesale distribution will be done by an organization that has distributed the Alemite greases for several years.

Tide Water Oil Co. last week introduced its new Veedol oils which are 100 per cent Pennsylvania. This oil is advertised to be "without a superior; without an equal." The price, according to the advertisements to the trade, is "without a price premium." This indicates a price of 25 cents a quart in the east and 30 cents a quart in the west.

TIDE Water illustrates its advertisement to consumers with a four-ounce sample of the oil. The oil is so clear a newspaper may be read through it, it is stated. Lubrication at sub-zero temperatures is claimed.

The oil is being made at Bayonne, N. J., in a new plant Tide Water built for its production. This plant has the latest equipment throughout including an installation of the Edeleanu sulfur dioxide process.

Shell is buying neutrals and bright stocks in the Pennsylvania field in large quantities preparatory to its introduction of 100 per cent Pennsylvania motor oils. Recently Shell reduced the price of its own motor oils at retail from 30 to 25 cents a quart. The Shell buying resulted in the recent rise in prices of Pennsylvania lubricants.

Safe Dry Cleaning Fluid and Machine Bring In Women Customers

CLEVELAND, March 7

A HOME-SIZE dry-cleaning and washing machine and a non-explosive, safe and quickly evaporating cleaning fluid are two of the latest merchandising developments of the Canfield Oil Co. here, aimed to get women's trade.

Since so many women have begun cleaning garments at home to save high cleaner's bills, the inexpensiveness of the machine and the safety and cleansing quality of the cleaning fluid appeal to them.

The company estimates that with one gallon of its quick-safe dry-cleaning fluid at $1.50 per gallon, it is possible to do from $18 to $20 worth of dry-cleaning. The machine costs $4.95 in the smaller size and $7.85 in the larger, or five-gallon size.

Its business will come from the 10 to 12 gallons of cleaning fluid each machine will average yearly and from the publicity the company gets from having these products in the home.

Not only is it possible to clean dresses, hats, gloves, neckties, collars and cuffs, and so on, in this machine, but to wash stockings, lingerie, and other daintier wearing apparel.

This Nu-way cleaner and washer is hand-operated. It is entirely of metal with no moving parts in the interior to get out of order. Its only moving part is the revolving drum with the sides corrugated to produce a gentle rubbing action, while the cleaning fluid surges through the fabric, thus removing the dirt.

In order to draw the atten-

A young lady dry-cleaning a rack full of clothes, safely and inexpensively, in her own kitchen

tion of housewives to this machine and fluid, the company first advertised over the radio on what is known as "Women's Hour." A short talk of 150 to 250 words telling of the advantages, safety and economy of the dry-cleaner, was used. Inquiries began to pour in and numbers of women drove into company stations to inquire about the machine and ask for demonstrations. In the experimental tests, three demonstrators were kept busy, going from house to house with a machine under the arm.

From 80 to 90 per cent of all these demonstrations resulted in sales, the company estimates. Those who did not buy were visited later by a specialty salesman who made an effort to clinch the sale.

Telephones and house-to-house selling were also used. The company found that the telephone and radio were the most satisfactory, although the latter is more costly, but faster, than the house-to-house canvass.

Another result of the machine and cleaning fluid is that they have brought the Canfield name into the home which, it says, has increased sales and customers at its service stations.

All the requirements of a good cleaning fluid, the company claims, are included in the Canfield fluid, such as cleaning thoroughly and leaving no greasy residue; quick evaporation and safe so the average housewife under normal conditions can use it without the fear of causing an explosion or fire.

A service station salesman demonstrates the dry-cleaning and washing machine developed by the Canfield Oil Co. and sold at its stations

Narrow Operating Temperature Range Improves Lubricant Performance

By H. C. Mougey*

(Presented before Western Petroleum Refiners Association Meeting, Excelsior Springs, Mo., March 10-12, 1931)

"LUBRICANTS, from the Automobile Engineers' Standpoint," is such a broad subject that it is impossible to do more than touch the high spots in a single talk. In the instruction books the different automobile companies recommend the types of lubricants desired for the engine, the transmission, the rear axle, the generator, the spring shackles, the front wheel bearings, the shock absorbers, the steering gear, and other parts of the car, and on a single model a different lubricant may be recommended for each part.

To further complicate the problem, two or three variations of some of these lubricants may be recommended for different service conditions such as those due to climate, speed, continuous or intermittent driving, etc. Different models made by a single company or by different companies may have different types of lubricants recommended for similar uses. To meet all these requirements for the different uses on all the different models made by the different companies, it would appear that every filling station would have to carry several dozen different lubricants.

However, automobiles are scattered all over the world, and it is apparent that it must be possible to operate them on the lubricants that can be obtained in the localities where the automobiles are operated. From the standpoint of the automobile engineer it is desirable that the automobile should be as insensitive as possible to differences in the physical or chemical properties of the lubricants. Viewed from this angle, universal distribution of the lubricants is the most important factor to be considered.

The factors which are next in importance are those of the quantity required and cost. The average amount of lubricant per automobile per year is probably 20 gallons. With 26 million automobiles in the United States, this requires about one-half of a billion gallons of lubricant per year. Water and products derived from petroleum are about the only liquids that are available in large enough amounts to be considered from these standpoints.

When we compare water with lubricants derived from petroleum, the superiority of the petroleum lubricants in regard to rust prevention, resistance to freezing, and loss by evaporation makes the choice narrow down to petroleum lubricants.

This brings us to the next important property. Since lubricating oils are used to lubricate bearings, a very desirable property is the ability of the oil to separate the surfaces and thus avoid metal-to-metal contact. As the result of the work of a number of investigators[1] it has been found that the coefficient of friction, for fluid film lubrication, is proportional to $\frac{Zn}{P}$ where Z is the absolute viscosity of the oil, n is the speed of rotation, and P is the load in pounds per square inch or projected area.

In other words, for fluid film lubrication, the load-carrying ability of an oil depends on its viscosity and the higher the viscosity of an oil the greater the load it will carry, but the greater the friction that will be developed at any definite speed and load.

It has been found that fluid film lubrication fails when

*Assistant Technical Director and Chief Chemist, Research Laboratories, General Motors Corp., Detroit, Mich.

[1]Journal of Industrial and Engineering Chemistry, Vol. 14, page 682, 1922.

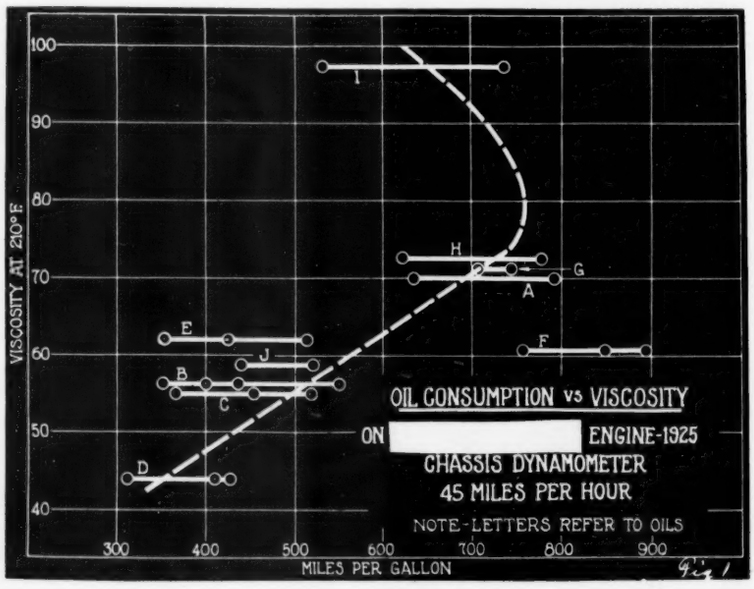


Fig. 1

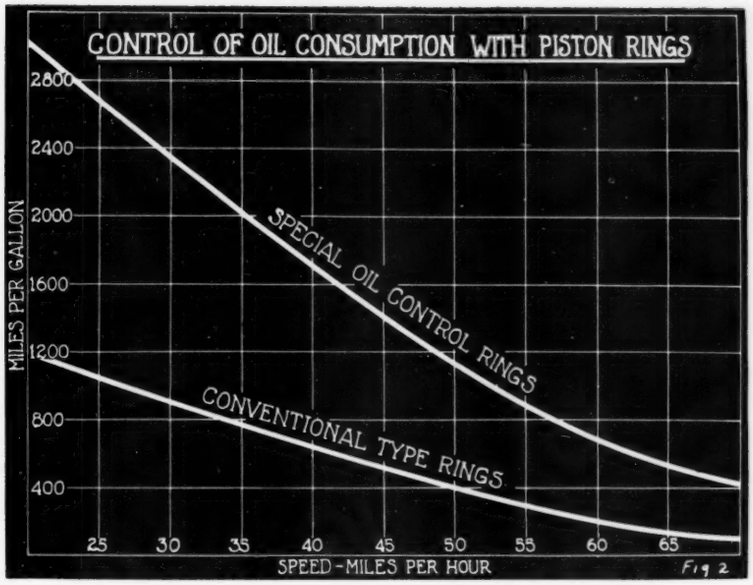


Fig. 2

either or both the viscosity of the oil or the speed are too low or when the load is too high. There is some question as to how low viscosity can be before a lubricant is too thin for use in an automobile engine.

Oil Consumption

In most cases the factor which determines the minimum oil viscosity is oil consumption. The chart (Fig. 1) shows the results of a series of tests to study the relation of viscosity to oil consumption. In this test, which was made on an engine operated at 45 miles per hour, it will be noted that the miles per gallon increased as the viscosity of the oil increased, up to a certain limit, and then further increases in oil viscosity resulted in a decrease in the miles per gallon.

We believe that this is due to two causes which oppositely affect oil consumption. Increasing the viscosity decreases the amount of oil that leaks past the bearings and is thrown on the cylinder walls, but after a certain value is reached, a higher viscosity decreases the ability of the oil to drain from the cylinder walls or to escape through the holes in the oil control rings.

Both of these effects are discussed by Round in a paper on Oil Consumption which was presented at the Summer Meeting of the S.A.E. in 1922[2]. This critical or limiting viscosity varies with different engines and different operating conditions.

In Fig. 1 it will be noted that even with the same viscosities, some oils give greater miles per gallon than others. This difference is due to volatility. This effect of volatility is well known. It is mentioned in the paper by Round on Oil Consumption. In the 1920 instruction book of one of the large oil companies[3] this effect of volatility is discussed as follows:

"If a lubricating oil contains a large portion of low boiling point constituents, the loss of oil vapors will be proportionately high when it is used in an engine, and vice versa. Some loss will always occur, but the choice of the right oil will reduce such needless waste to a minimum and be a guarantee of a reasonably low specific consumption, good lubrication and practically carbon-free conditions within the explosion chambers. The degree of volatility which lubricating oils should have is entirely determined by the maximum operating temperatures of the engine and by the character of its load, full or variable."

This importance of operating conditions is one of the reasons why it is difficult or impossible to decide as to the quality of a lubricating oil by its analysis or chemical and physical properties without reference to service conditions. On engines fitted with oil coolers, the maximum operating temperatures are decreased and the effect of volatility is greatly reduced. Engines with oil coolers may give excellent results with certain oils that might be unsatisfactory without oil coolers.

Another advantage of decrease of maximum oil temperatures by oil coolers is the higher oil viscosity resulting from cooler oil with a corresponding increase in miles per gallon of oil.

Oil consumption, however, is affected by other factors besides oil viscosity. The greatest single factor is engine speed. As the speed increases the oil consumption increases very rapidly, and at high speed an increase of only a few miles per hour in speed may make a great difference in oil consumption. This is shown by the curve (Fig. 2).

This curve is taken from a paper by Bramberry[4] on the subject of oil control by piston rings. It illustrates the fundamental difficulty encountered in trying to control oil consumption by means of rings. The control is more or less effective over the entire speed range and too great a decrease

[2]Round, Journal of Society of Automotive Engineers, Vol. X, page 509, 1922.

[3]Tide Water Oil Company's Veedol Lubrication Book, page 23, 1920.

[4]Bramberry, "Pistons and Oil Trapping Rings for Maintaining an Oil Seal." Journal of Society of Automotive Engineers, Vol. XXIII, page 495, 1928.

Table 1

Viscosities of Oils Used in Cold Starting Tests

Temp.° F.	SAE 30	SAE 10*	Special Light Oil
—20	1,000,000	55,000	6000
0	150,000	12,000	1800
+30	18,000	1,800	460
+100	525	155	76
+130	220	84	55
+210	60	43	38

*Note—This oil is somewhat lighter in viscosity than SAE 10 (90-120 at 130°F.) It is referred to as SAE 10 for convenience.

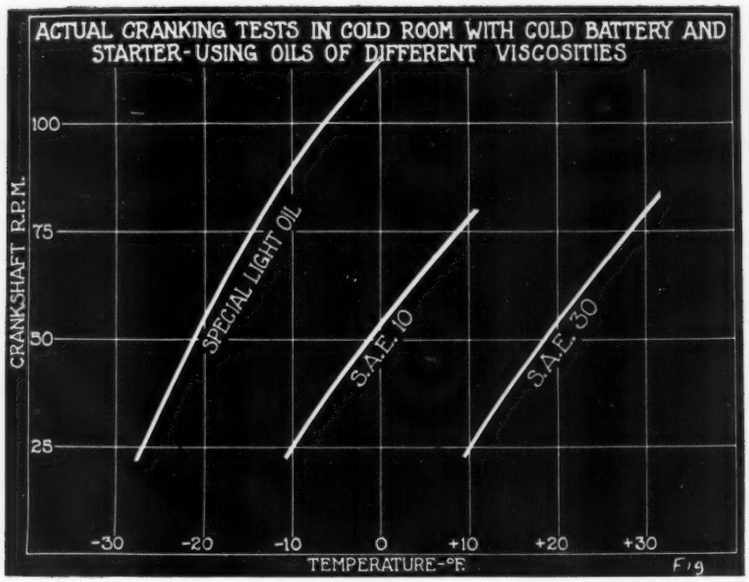


Fig. 3

of oil consumption at high speeds may lead to insufficient lubrication at low speeds.

Viscosity and Starting

We have seen how the minimum oil viscosity is important. The maximum oil viscosity is even more important on account of its effect on starting and lubrication at low temperatures. In the winter, too high oil viscosity will make starting difficult or impossible, and in addition, even if the engine should start, the lubrication might be very poor, resulting, in extreme cases, in scored cylinders or burned out bearings. Although much work has been done on this subject and a number of papers have been published in which the different factors were discussed, the general public still seems to have mistaken ideas in regard to cold weather lubrication problems. In all probability this is due to the public placing the wrong interpretation on advertisements for winter lubricants. A small amount of paraffin wax in oil with a corresponding high pour test has little or no effect on the ability of the starter to crank the engine in cold weather.

Cranking, insofar as the oil is concerned, depends upon the viscosity of the oil at the cranking temperature. The pour test is of great value in determining whether or not the oil will flow to the pump inlet, although it has little or no effect on the flow of the oil under pressure in the lubricating system.

The viscosity of the oil at the low temperatures is as important as the pour test in determining the flow of oil to the pump inlet under winter conditions, and the flow of the oil under pressure in the lubricating system depends upon the viscosity of the oil at the temperature in question.

We recently made tests to illustrate the effect of the viscosity of the oil on cranking the engine. Tests have shown that, in general, unless the starter can crank the engine 25 revolutions per minute, starting is difficult or impossible even for an expert, and unless the starter cranks it at least 50 revolutions per minute, the average driver will have more or less trouble in getting the engine started.

Of course, these values are affected somewhat by engine design, ignition system, manifolds, etc., but the values of 25 and 50 R.P.M. may be taken as fair averages. In the tests we are now considering, three typical oils were used. Their viscosities at different temperatures are shown in Table 1.

A Summer oil (S.A.E. 30) typical of the kind of oil used for average summer driving was the heaviest oil in this test. A light winter oil (S.A.E. 10) was the next lightest. The third oil was too light to be classified by the S.A.E. system. In Fig. 3 are curves showing the cranking speeds obtained with these oils when tested in a popular six-cylinder engine using a fully charged cold battery. Tests in a number of other engines of different kinds also gave values of the same general order as those shown here. It will be noted that the temperatures at which 25 and 50 revolutions per minute of the crankshaft were obtained are as follows—

Table 2

Minimum Cranking Temperatures for Three Grades of Oils

	Temperature for 25 RPM	Temperature for 50 RPM
S.A.E. 30 oil	+10° F.	+18° F.
S.A.E. 10 oil	—10° F.	— 2° F.
Special extra light oil	—27° F.	—22° F.

To check these results we removed the battery and starter and determined with the dynamometer the torque required to crank the engine at 25 and at 50 R.P.M. at the different temperatures with these oils. We then determined the torque that could be developed by the starter and battery at these same temperatures and speeds, and we found that our actual cranking tests checked with the values calculated from this torque data.

Dilution Helps Starting

We have shown this data to a number of people but in general their reaction to it is one of unbelief. They say that they have driven cars for a number of years and that they have used commercial oils and cranked engines at temperatures lower than those that appear to be possible from this data.

The explanation is that the viscosity that is most important in these tests is the viscosity of the oil between the pistons and cylinders, and this viscosity is usually greatly reduced by the presence of gasoline in the oil on the cylinder walls. In other words, crankcase dilution that we have regarded with such fear and distrust for so many years, turns out to be a blessing in disguise insofar as winter starting is concerned.

A dilution of 10 per cent in the case of an oil that is about 300 at 100° F. will just about cut the viscosity in half and a

dilution of 20 per cent will reduce it to about one-third its original value. This explains why stopping the engine on the choke before turning off the ignition is one of the popular tricks to help cold starting the following morning.

The beneficial effect of moderate crankcase dilution is also one of the reasons why some automobile companies do not like to recommend frequent crankcase draining, especially in the winter time. When an undiluted oil is put into the crankcase in winter it may take from 25 to 50 miles of driving before the oil is sufficiently diluted to make the oil thin enough for cold starting or circulation at low temperatures.

One of the possible solutions to this problem is the use of pre-diluted oils. Another solution is the use of oil coolers or "oil temperature regulators" as they are more properly called. By the use of oil coolers the maximum oil temperature reached in service is reduced, and, as a result, the viscosity of the oil under high speed driving conditions does not decrease so much. This permits the use of an oil that is much lighter in viscosity than would be practical without the oil cooler.

If we should assume that under high speed driving conditions the maximum oil temperature without an oil cooler is 210° F., and if under these conditions we used a paraffin base oil with a viscosity of 50 at 210° F. and 250 at 100° F., it would be found that the viscosity of this oil at 0° F., would be 26,000 seconds.

If by the use of an oil cooler the maximum temperature under high speed conditions should be reduced only 25° to 185°, then with the same viscosity of 50 at the maximum oil temperature, the viscosity of the paraffin base oil would be only 160 at 100° F. instead of 250 and the viscosity at 0° would be only 10,500 instead of 26,000.

Regardless of how important an oil cooler may be to limit the maximum temperatures for summer driving, it is apparent that an oil cooler is equally important in its effect on cold starting in winter. Another advantage to be derived from

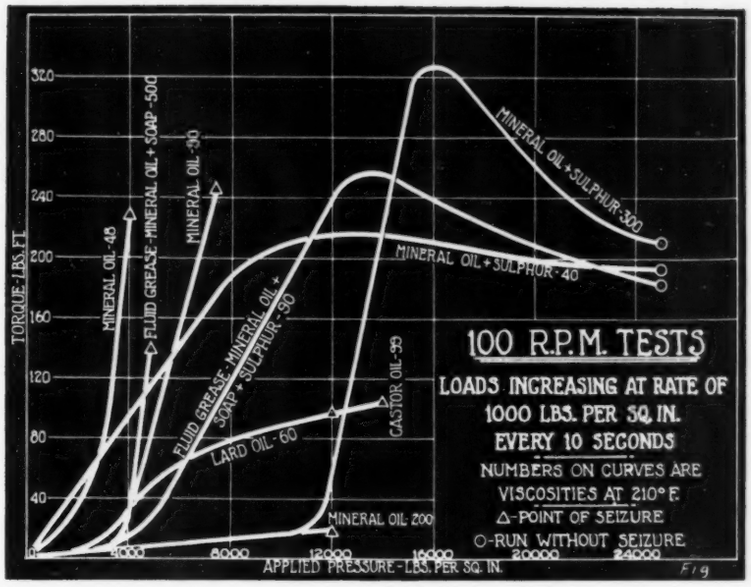


Fig. 4—Torque required to crank test apparatus at 100 r.p.m. with different lubricants, with increasing bearing pressure. Note that only the lubricants containing added sulfur did not seize at pressures up to about 25,000 pounds per square inch

the oil temperature regulator in winter is the rapid warm-up of the oil that it makes possible. By the use of thermostat or shutters the temperature of the jacket water may be raised very rapidly.

By transferring some of this heat to the oil by means of a suitably designed oil temperature regulator, the time required to obtain sufficient fluidity of the oil for distribution and circulation throughout the lubricating system may be greatly decreased, and in this respect also, the oil temperature regulator is a valuable winter lubricating device.

In this discussion of oil coolers it may appear that the subject of lubricants is being neglected, but a consideration of lubrication involves both the oil and the engine. The two subjects are just as closely related as a gun and a bullet. From an actual service standpoint a lead bullet that fitted the gun would be of much greater value than a solid gold bullet that did not fit the gun. In a similar manner, the oil and the engine must be suited to one another, and it is of little use to try to evaluate the quality of an oil without considering at the same time the engine and the service conditions.

S.A.E. Numbers

Oil tests in general are of value to help determine the identity of an oil or to check it for uniformity in different shipments. For many years the importance of having the oil suited to the engine and operating conditions has been recognized. The S.A.E. viscosity numbers, which are now in such general use for automobile engine lubricants, are the result of the recognition of this fact.

Lubricants, for transmissions and rear axles are almost as important as engine lubricants, but until quite recently there was no generally recognized method of recommending them. The practice of the oil companies of putting small amounts of soap in these lubricants to decrease leakage, further complicated the problem. Since these lubricants containing small amounts of soap could not be classified and the desirable ones distinguished from the undesirable ones, many of the automobile companies warned the public against all such lubricants.

However, at the last meeting of the Society of Automotive Engineers, a system of S.A.E. viscosity number by which transmission and rear axle lubricants could be classified and recommended was adopted. It is like the system in use for engine oils in that it classifies the lubricants according to viscosity, and leaves the responsibility for other factors affect-

ing quality to the oil company supplying the lubricant. This system is very rapidly coming into general use. If the oil companies will co-operate with the automobile companies by instructing the men at the filling stations and by suitably marking their lubricants men at the filling stations will know which ones of their trade marked lubricants should be supplied to meet the various recommendations of the automobile companies.

In the early part of this talk we discussed fluid-film lubrication. When fluid film lubrication fails, the property of "oiliness" is important. It is a property that is not very well understood although examples of oils differing in "oiliness" are very common. "Oiliness" has been defined by Wilson and Barnard[5] as the property of lubricants by virtue of which one fluid gives a lower co-efficient of friction than another fluid of the same viscosity, generally at low speeds or high loads. When operating in the field of fluid film lubrication, oiliness is of no value, but if the film should fail from too high a load or too low a speed an oil that has the property of oiliness may possibly prevent scoring or seizing. Wilson and Barnard[6] state:

"With the exception of the lubrication of the bands of a planetary transmission, it has not been definitely demonstrated that oil of high 'oiliness' is of any real advantage in the operation of an automobile engine. . . . ."

Our experience is certainly in accord with this statement. Automobile engines will operate so well with oils which do not have any more "oiliness" than regular commercial motor oils that it is difficult to make a test with an automobile engine under normal operating conditions to show any possible advantage due to oiliness. However, under certain conditions with certain types of rear axles, oils with "oiliness" are necessary.

[5]R. E. Wilson and D. P. Barnard, "The Measurement of the Property of Oiliness," Journal Society of Automotive Engineers, Vol. II, page 143, 1923.

[6]R. E. Wilson and D. P. Barnard, "The Significance of Various Tests Applied to Motor Oils," Proceedings American Society for Testing Materials, Vol. 28, Part II, page 684, 1928.

In our laboratory, "oiliness" tests are made by determining the co-efficient of friction of oils using a shaft of hardened steel with a hardened steel bushing, operating at 100 R.P.M. and gradually increasing the load from zero to 25,000 pounds per square inch if possible. The power required to turn the shaft in the bushing, plotted as beam load in Fig. 4, is a measure of the co-efficient of friction.

With oils which have a viscosity of approximately 90 at 210° F. seizure will occur at about 7000 pounds per square inch if the lubricants are deficient in "oiliness," but with lubricants which have enough of this quality the bearing will carry the full 25,000 pounds per square inch without seizing.

We have been able to prevent seizing with "oily" oils as low in viscosity as 40 at 210° F. although if the oils do not possess this property of "oiliness" seizure on our test machine has occurred in all cases before 25,000 pounds per square inch was reached regardless of the viscosity, even though oils tested varied over the entire range of 40 at 210° F. to 300 at 210° F. This machine may be operated under a number of other conditions to show "oiliness," provided the necessary relations are maintained between viscosity, high load and low speed.

Transmission Lubrication

The S.A.E. system for classifying transmission and rear axle lubricants recognizes the difference between ordinary lubricants such as those in general use and the lubricants which will prevent scoring and seizing under extreme conditions. To distinguish these lubricants the classification E.P. signifying "Extreme Pressure" has been provided. The automotive industry is co-operating on this problem through committees representing the technical societies and the Bureau of Standards.

It is hoped that within a short time the factors involved will be known, at least to the extent that these "E.P." or extreme pressure lubricants can be made and distributed wherever they may be needed. It is evident that the general use of automobiles requiring any certain type of lubricant or other petroleum product must follow instead of lead the general distribution of the special product.

Since motors, axles, and transmissions are lubricated by means of a fairly large supply of lubricant which is used over and over again, the question of stability is important. During the use lubricant should not change in composition or properties so greatly as to be unsatisfactory. The change in viscosity with temperature has been mentioned as one change that occurs in service with all oils. The change in gravity, flash point, fire point, volatility and viscosity as a result of fuel dilution are other examples.

Sometimes soaps which are added to oils to increase the viscosity or lower the pour point lose their ability to produce these effects after the oil has been in use for a short time in the engine, transmission or rear axle. The color of a motor oil changes very rapidly during use, and many other changes in service could be mentioned. Oxidation of motor oils occurs in service and delicate tests to show small differences in resistance to oxidation have been suggested as tests to measure quality.

If the changes which occur in service are such as to interfere with the suitability of the lubricant for the purposes for which it is intended, then tests to measure stability in these respects may be of value in estimating quality, but if the changes are not of this magnitude and the performance of the oil in service is not injured, the net result of the application of stability tests may be to restrict the supply and increase the cost.

The importance of stability should be interpreted in terms of actual service. The formation of carbon deposits in engines formerly worried the automobile owners very much but the general use of fuels with improved anti-knock properties makes this problem of less importance at the present time. However, the tendency of automobile manufacturers to increase compressions may again make this problem very important. As another possibility carbon removers may be the

(*Continued on Page* 83)

ADVERTISING PAGES REMOVED

Application of the New Natural Gasoline Specifications

By S. S. Smith*

(Presented before Western Petroleum Refiners Association, Excelsior Springs, Mo., March 10-12, 1931)

AT YOUR Shreveport meeting last year the Natural Gasoline Association made you a number of vague promises concerning the research work under way and the specifications which would soon be forthcoming. This year we offer you the finished specifications and are prepared to illustrate the use and effectiveness of them in the refinery.

Natural gasoline is mainly valuable to you because of one thing—its volatility. Secondary values of natural are to improve the knock rating of your finished fuel, and perhaps with some of you to improve your finished gravity. The volatility of a natural is a direct function of its composition in terms of its two lighter components—butane and pentane.

Propane is intentionally omitted from the lighter components in the expectation that all of you will agree that it has no place in a finished motor fuel blend, and that therefore it has no place in a blending stock such as natural.

Hexanes, heptanes and octanes are already present in your refined stocks, and therefore the sale of them in natural gasoline is incidental, and brought about by the fact that they serve as solvent agents for the more valuable volatile components.

The new specifications revolve around the foregoing assumptions, using the 140°F. per cent evaporated as the index of the butane and pentane composition and qualifying this with the Reid Vapor Pressure at 100° F. to differentiate between butane-pentane and propane-butane. The specifications are as follows:

Natural gasoline is a liquid petroleum product consisting of the heavy hydrocarbons extracted from natural gas by such means as compression absorption and other processes.

Natural gasoline is defined further for commercial purposes by the following specifications.

1. Vapor pressure—10 to 34 pounds per square inch absolute at 100° F. (Reid).
2. Percentage evaporated at 140°F.—25 to 85.
3. Percentage evaporated at 275°F.—not less than 90.
4. End point—not higher than 375°F.
5. Corrosion — non corrosive.
6. Doctor test — negative, "sweet".
7. Color—not less than 25 (Saybolt).

In addition to the above general specifications, natural gasoline shall be divided into 24 possible grades on a basis of vapor pressure and percentage evaporated at 140°F. The maximum vapor pressure of the various grades shall be 14, 18, 22, 26, 30 and 34 pounds respectively. Each grade shall be designated by its maximum vapor pressure and its minimum percent evaporated at 140°F as shown in Chart A.

In addition to the changes in volatility specifications described in the preceding, several minor changes have been made, as follows:

(1) An omnibus requirement has been included, stating that the A. S. T. M. per cent evaporated at 275°F. shall not be less than 90.

(2) It has been considered necessary to standardize the doctor test as applied to natural gasoline.

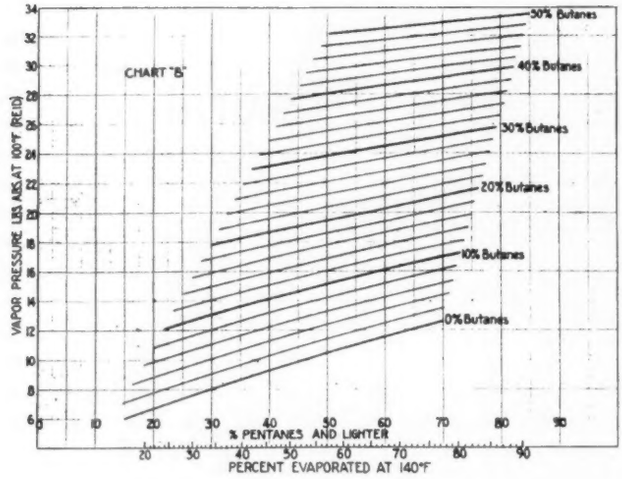
It will be seen that the grades range in vapor pressures from 14 pounds maximum to 34 pounds maximum and the volatility ranges are inclusive as follows: 25-40, 40-55, 55-70, and 70-85. The ranges of per cent evaporated at 140°F. and the Reid vapor pressures within each grade are picked so that in a finished blend of 15 per cent natural the vapor pressure will be controlled within one pound and the ten per cent point will be controlled within 5°F. by use of specification grade alone.

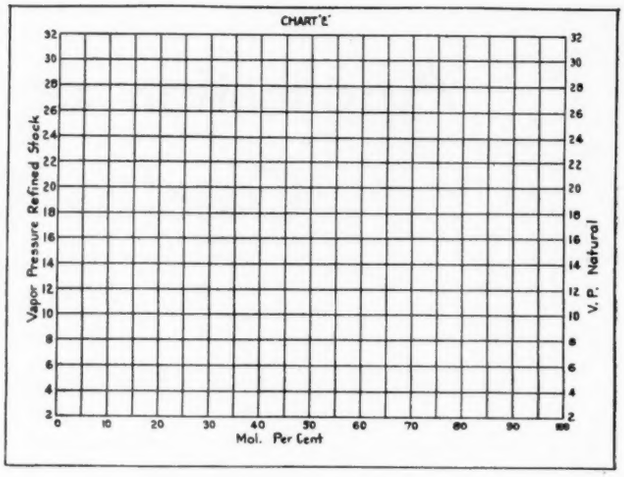
Since there are six vapor

Chart A

Grades of Natural Gasoline
Percentage Evaporated at 140° F.

Vapor Pressure, Lbs. Per Sq. In. Abs., at 100° F. (Reid)	25	40	55	70	85
34					
30	Grade 34-25	Grade 34-40	Grade 34-55	Grade 34-70	
26	Grade 30-25	Grade 30-40	Grade 30-55	Grade 30-70	
22	Grade 26-25	Grade 26-40	Grade 26-55	Grade 26-70	
18	Grade 22-25	Grade 22-40	Grade 22-55	Grade 22-70	
14	Grade 18-25	Grade 18-40	Grade 18-55	Grade 18-70	
10	Grade 14-25	Grade 14-40	Grade 14-55	Grade 14-70	





pressure ranges and four volatility ranges, 24 grades result. This may seem an excessive number of grades, and may seem to make of the grading system, which is excessively complex. However, in order to accomplish the purpose of the grading system, either a large number of grades must be used or there must be substituted a complex relationship between vapor pressure and volatility. Our purpose as stated above was to evaluate the gasolines in terms of volatility and/or composition. The next two charts will, I believe, show how well this has been accomplished.

Chart B illustrates the relationships existing between the percentages evaporated at 140 plotted as abscissa and the Reid Vapor Pressure plotted as ordinates, on the one hand, and the composition per cent of pentane and lighter as secondary abscissa with the composition per cent of butane plotted as equal percentage contours on the other hand. This chart shows clearly how the reference points of the specifications actually fit the compositions of the natural gasolines.

These relationships have been in active use by several companies for about a year and have been repeatedly checked both by analysis and by synthetic blends and found to be highly accurate. You will note that propane has been omitted from consideration in this chart.

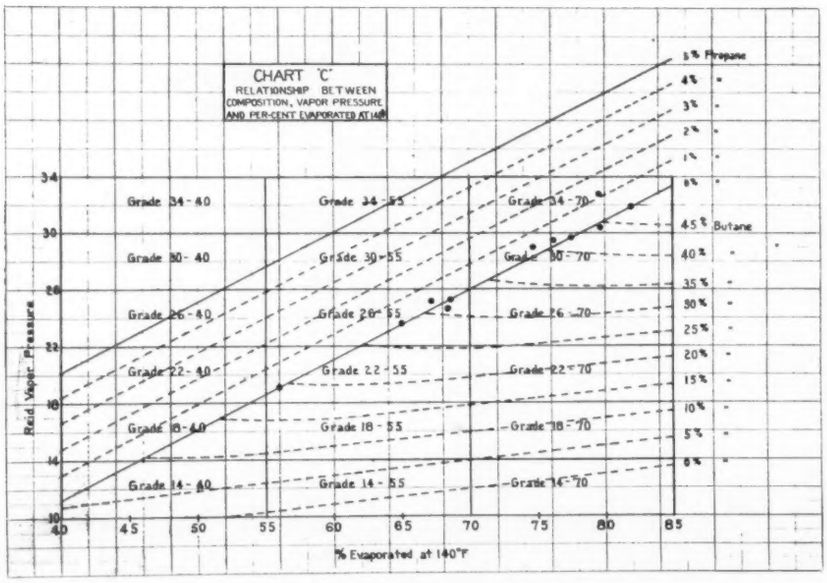
Chart C shows a slightly different setup of the butane and propane compositions of a natural. Here we have the same 140 degree points used as abscissa against the Reid Vapor Pressures as ordinates, with the grade structure of Chart A superimposed and the percentage butanes and propanes sketched in as contours.

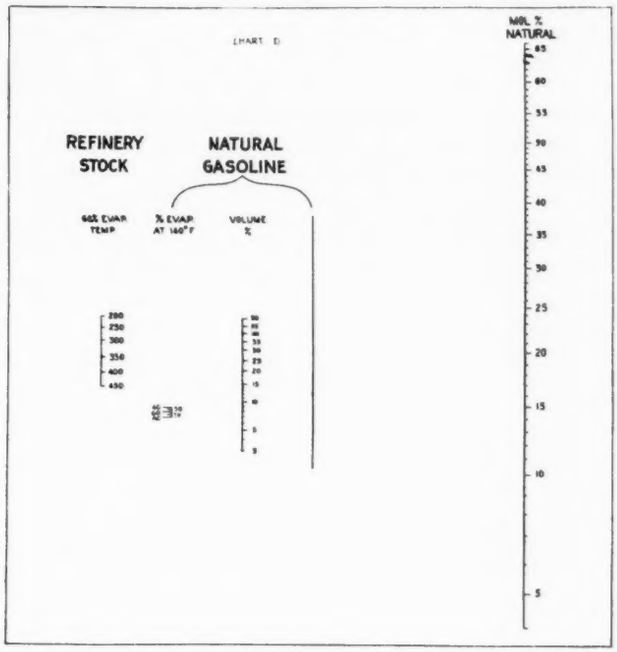
This chart is not intended as an extremely accurate indication of the composition of natural gasolines but it intended to show average compositions of natural gasoline resulting from normal manufacture with reasonably efficient secondary rectification. This Chart C is made up from data arrived at by rectification and analysis of samples from twelve plants each carried down to 40 per cent off at 140° F.

At this time I wish to point out that it is almost impossible to put together a synthetic blend which will meet the grades below the propane free line if either butane is substituted for petane or propane for butane. Such a blend will inevitably fall into the grades shown on Chart C as above the propane free line. I would like to amplify this statement and make it clear that substitution of butanes for pentanes will decrease the per cent evaporated at 140° F. or will increase the vapor pressure. In either event this will move the particular gasoline upward in vapor pressure grade or will decrease its volatility grading.

The statement is not intended to convey the impression that gasolines above the propane free line are not usable. On the contrary, they are highly efficient blending agents for certain purposes. However the majority of users of natural now are trying to increase volatility while retaining or lowering vapor pressures.

The same tendencies are evident in the increasing use of pressure distillate stabilizers or other means of effectively con-





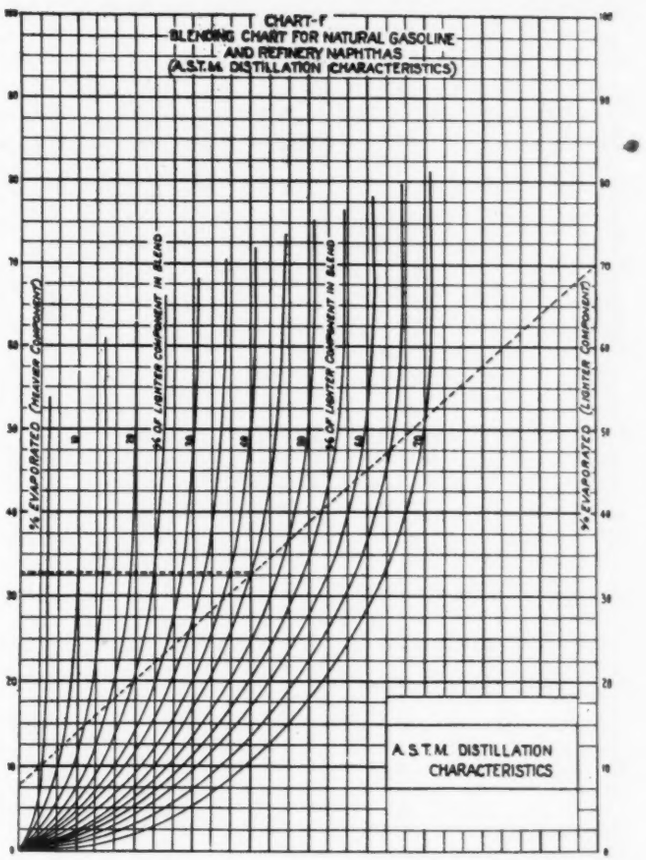


CHART-F
BLENDING CHART FOR NATURAL GASOLINE AND REFINERY NAPHTHAS
(A.S.T.M. DISTILLATION CHARACTERISTICS)
% EVAPORATED (HEAVIER COMPONENT)
% OF LIGHTER COMPONENT IN BLEND
% OF LIGHTER COMPONENT IN BLEND
% EVAPORATED (LIGHTER COMPONENT)
A.S.T.M. DISTILLATION CHARACTERISTICS

trolling the vapor pressures of refinery stocks. The effort of the Natural Gasoline Association has been to reflect progress in specifications in the same general direction as does technical progress in the refineries.

If purchasers of the new specification naturals will use those composition data sheets in arriving at desired gasolines and if I am correct in assuming that you can use propane free gasolines to better advantage, then we have immediately decreased our number of grades for probable use. These propane content gasolines are 34-40, 30-40, 26-40, 34-55, 30-55 and 34-70. In addition, parts of 30-70, 26-55 and 18-40 fall above the line. However, it will be found in use that if these latter three grades are made by ordinary good fractionation they will be essentially propane free with a slightly reduced butane content.

It is possible now to make the general statement in connection with the new specifications, that the lower the vapor pressure and the higher the volatility, the more difficult it is to manufacture, but the more valuable it is to the blender in controlling volatility with control of vapor pressure. On the other side of the chart, while it is possible to make 14-70 gasoline, the writer has never seen any and it is extremely doubtful whether any of it will appear on the market, so that we may now consider our useful grades cut to 17.

These 17 grades, then, correspond to our old grading system which included five grades, of which only one received large volume consideration. This brings us to a logical consideration of the reason for 17 grades and how they may be made to serve the greatest use in the refinery.

In the first place I assume that you gentlemen agree, by and large, with authors well known to the industry, who have shown that the vapor pressure of a motor fuel is the best index of its vapor locking tendencies, I also assume that each of you in some form or other use the A. S. T. M. distillation points along the front end of the curve for the purpose of evaluating the starting qualities, warming up and acceleration ability, and perhaps to some extent the detonating qualities of your finished fuels. With these assumptions in mind the new specifications for naturals become something actually related to your finished motor fuel instead of merely letters in a grading system as in the past.

We know that the vapor pressure of a finished blend is a function of the molecular percentages of the materials used in blending. Molecular percentages are a nuisance to handle in the ordinary computation methods, particularly if they are to be used in a large number of routine calculations. With this in mind there is presented Chart D which by straight edge calculations and using ordinary specification distillation points, converts volume percentages of natural and refinery naphthas or gasolines into their corresponding molecular percentages.

Supplementing Chart D is presented Chart E which uses the molecular percentages determined from the former to evaluate the vapor pressure of a finished blend. In use this chart solves for any one of the unknowns if the others are known of, vapor pressure of natural, vapor pressure of blending stock, vapor pressure of finished blend, and per cent of natural in the blend by volume.

It uses the familiar method of straight edge calculation as follows: Given the vapor pressure of refinery stock, the vapor pressure of natural to be used, and the vapor pressure of finished blend desired, and solving for volume per cent of

natural to use. Assume that the vapor pressure of refined stock is 3.6 pounds, the vapor pressure of natural available is 26 pounds and that the finished blend is to be an 8-pound gasoline.

ON CHART E are connected the vapor pressures of the blending materials and at the point where this line crosses the 8-pound line a vertical is dropped to the base scale, reading 20 mol per cent of natural desired in the blend. On Chart D, the figure of 20 mol per cent of natural is connected with the 60 per cent evaporated temperature of the refinery blending stock and the point of contact of this line with the dummy scale is used as a pivot to connect a new line to the per cent evaporated point of the natural. The intersection of this new line with the volume per cent of natural scale determines the desired composition of natural in the blend, in this case 16 per cent.

Since there were certain assumptions made in the construction of this chart, it might be well to discuss them. First, it was assumed that the 60 per cent evaporated temperature of the refined stock was roughly an index of the average boiling point of the naphtha. Second, it was assumed that the average boiling point of the naphtha determined the molecular weight.

This assumption, it is conceded, stretches a point of truth. It would be true if the composition per cents of unsaturates, saturates and cyclic compounds remained constant, but it is recognized that these factors vary. However, when the gravity and molecular weight are tied together into one factor as we have done in this instance we are inclined to think that our assumptions are not inaccurate enough to seriously affect the finished result.

The molecular constants used in Chart D with respect to natural gasoline were evaluated from composition per cents and are correct within the limits of error in the use of the chart. Use of this chart on a large number of blends shows that the inaccuracies resulting from incorrect interpretation of the molecular weights of the refined stocks are not sufficiently great to exceed the limits of experimental error of the finished vapor pressures.

Our check tests in the use of this curve have not included as much cracked stock as we would like, and if in use in the blending of heavily cracked pressure distillate stocks this chart shows a constant deviation from actual results, it may be necessary to slightly correct the gauge points for the 60 per cent evaporated temperatures of the refined stocks. In our own use of this chart we have found a maximum deviation from experimental data to be about three-tenths pound Reid.

A subsidiary use of this chart is in the blending of natural gasoline with refined stocks to obtain better anti-knock rating in the finished fuel. For this purpose the vapor pressure scale may be rescaled to read in terms of benzol equivalent, octane number of H. U. C. of the respective blending materials. Results of use of this curve for such blending will be well within the limits of experimental error.

NATURAL gasoline may be taken as having an octane number of 45 plus its vapor pressure. Thus a 20-pound gasoline will have an octane number of 65, a 30-pound gasoline an octane number of 75, etc. These figures are not exact but are reasonably close and I believe conservative. They apply of course only to well fractionated gasolines of average butane pentane compositions.

For my next chart I am indebted to Dick Alden of the Phillips Petroleum Co. This chart, which is reproduced as Chart F, relates the distillation points of the two blending stocks into the finished distillation points of the blend. It also is a straight edge chart and is accurate within experimental limits for percentages off up to about 212° F.

From this chart and the distillation curves of the two blending stocks can be predicted the entire front end distillation points of the finished blend. To use, simply connect the per cents evaporated at given temperatures of the two blending stocks and read below intersection of this straight line with the percentage natural used the percentage evaporated at reference temperature in the finished blend.

GIVEN the last three blending charts and the specifications of the blending stocks, it should be possible to derive almost any sort of finished front end volatility curve in the blend which one might desire.

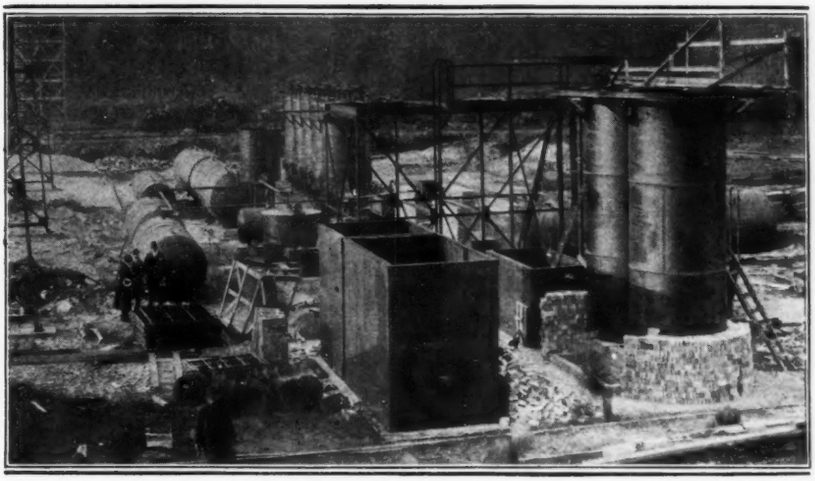
This statement brings us back to our original consideration for the large number of grades in the new grading system, and gives me at least an opportunity to present some of the reasons for making rather fine distinctions in the specifications of our naturals.

Some refiners doubtless will want to use just as little natural as possible and still maintain their finished fuels at or close to their desired specifications. In this event that refiner will doubtless use a natural like a 26 or 30-70. This will give him a few gallons concentrated volatility while still assuring him that he is not going to have a lot of wild constituents in his finished stock which will give trouble due to excessive handling losses, loss of starting quality due to reduced vapor pressure at point of consumption, etc.

On the other hand, the same refiner at some other time of the year or at slightly changed market conditions may desire to work off as much natural as possible in a given blend. For that refiner we have grades such as 14-40, 14-55, and 18-55 which can be used up to the limit of vapor pressures in his finished fuels while still not detracting in any way from the performance characteristic of his finished motor fuels. This brings to mind another use of the molecular percentage relationships given in Charts D and E.

The figures of consumption of natural gasolines against the use of refined stocks show that there is average use of about 12 per cent of natural in total fuel sold. Practically all refinery stocks at present will stand up to 20 per cent blend of natural gasoline, with improvement in their performance characteristics.

Many naphthas will improve



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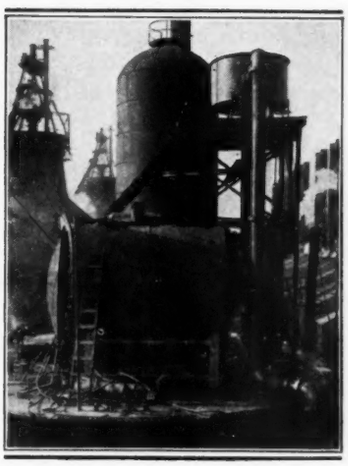

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with addition of as much as 35 per cent of natural gasolines and I know of blends in common use which actually go higher than 50 per cent.

Since the evolution of the new specifications and the better understanding of blending possibilities that have come with our studies along this line, we in the natural gasoline industry still feel that we are justified in saying that we have something of value to the refiner which in many cases the refiner is ignoring to his own detriment.

It must be understood in making this statement I do not mean that there should be indiscriminate use of high vapor pressure natural gasoline. I recognize that the vapor pressure of finished motor fuel should be very carefully controlled and that the improper use of excessive vapor pressure may be exceedingly harmful. However, with the new specifications, and the resultant possibility of buying and using vapor pressures as low as 14 pounds, there is no reason for hesitancy in using any amount necessary to get desired distillation ranges.

Low Rail Rates to Let East Texas Crude Move to Old Refining Centers

By Allen S. James
N. P. N. STAFF WRITER

SHREVEPORT, March 6

ATTRACTIVE rates which railroads adjacent to the new East Texas oil fields have announced in their efforts to discourage building of pipelines are likely to result in a considerable portion of the flush production of that area finding its way by tank cars to several refining centers.

There are five railroads, The Texas & Pacific, the International-Great Northern, the Cotton Belt, the Santa Fe and the Katy, close enough to the new fields to obtain some of the outgoing tonnage.

Several special rates already have been announced for crude oil shipments by tank car from Longview and Henderson to nearby refining districts in Texas and Louisiana. Some of the special rates which were announced when the field first was discovered, have been reduced from 2 to 4 cents per 100 lbs. in order to meet the threatened competition of pipelines.

At present there is a rate of 7 cents per 100 lbs. from Longview to Shreveport, via the T. & P., and of 11 cents to El Dorado via the T. & P. and the Missouri Pacific. A rate of 11 cents has been announced for shipment to Gulf ports, as well as to Gulf coast terminals when the crude is to be exported or moved coastwise. Dallas has a rate of 11 cents from Longview and 13 cents from Henderson, on the I. G. N. and T. & P. The Cotton Belt, touching at Tyler, has announced a rate of 9 cents to Dallas, although the oil would have to be moved in a roundabout way to reach that refining district.

There also is a rate of 14 cents via T. & P. for movement to the Mississippi river and thence by barge to New Orleans, the shipper to obtain a portion of that rate in the form of a refund for barging the oil.

The rate of 7 cents per 100 lbs. is equivalent to 21.7 cents a barrel. The rate at first was 11 cents, but when the Arkansas Fuel Oil Co. announced plans for a pipeline from near Longview to Shreveport the rate was reduced to 7 cents. The former rate to El Dorado was 13 cents but was reduced to 11 cents, equivalent to 34.1 cents a barrel.

The Arkansas company announced, after the rate had been lowered to 7 cents, that its plans to build the pipeline had been held up. The opinion generally around Shreveport was that the plans had been held up to see if the railroads would not reduce the rate still more.

The Arkansas company, meanwhile, has been shipping its production to its recently acquired subsidiary, the Louisiana Oil Refining Corp. at Shreveport. This company also bought earlier from another producer approximately 150,000 barrels.

The rate of 21.7 cents a barrel does not include of course, a cost of approximately 5 cents a barrel for gathering and loading from the loading racks built on the railroad's right-of-way adjacent to the fields. The cost of delivering the oil from Longview to Shreveport, therefore, is between 26 and 28 cents a barrel. The Shreveport-El Dorado Pipe Line Co., operating from the Arkansas fields to Shreveport, had a tariff of 20 cents a barrel for transporting, and 5 cents a barrel for gathering.

The East Texas oil, therefore, costs about 1 to 3 cents a barrel more delivered. With the lowest posted price in Arkansas at 54 cents, however, and with East Texas crude at 45 to 50 cents a barrel, and of a considerably better quality, it can be readily seen that refiners in the Shreveport district naturally would look toward East Texas.

That apparently is what has

happened. Soon after the reduction in rail rate to 7 cents, (21.7 cents a barrel) a new company, the Atlas Pipe Line Co. was formed to take over the Shreveport-El Dorado Pipe Line Co., and the Spartan Refining Co. was formed as a subsidiary to take over the Shreveport-El Dorado Refining Co. at Shreveport. The Atlas company announced work had already started on an 8-inch pipeline from near Longview to Shreveport.

About the same time rumors were persistent that the old Crystal refinery at Shreveport would be reopened and would be operated on East Texas crude, probably moved by the pipe line company.

SHREVEPORT, apparently, bids fair to resume a place in the sun as a refining center. The fields supplying crude in the past to the Shreveport plants have been dropping off steadily for several years. One or two plants have had to move considerable crude in by tank cars from other areas.

Arkansas refiners have not as yet run any appreciable quantity of East Texas crude, but the picture at present would lead one to believe that they will have to, through necessity, depend on this district if they desire to continue operations.

There had been no crude price changes in Arkansas and Louisiana at the time this was written, but there undoubtedly will be some adjustments downward. On the new Mid-Continent crude schedule, the oil in Arkansas will be well below 50 cents a barrel. But it costs more than that to produce much of the oil in those fields, and no operator for long is going to continue to lift his oil at a cost higher than his realization. There probably will be several producing properties shut down, forcing refiners to seek elsewhere for crude. And the East Texas flush production would be the place toward which they would turn.

The rate of 11 cents per cwt. for shipment of crude to the Gulf coast plants would, on the basis of 50 cents for the East Texas oil, plus the 34 cents freight, permit the refiners to obtain their crude for around 84 to 88 cents a barrel. This, it is said, compares very favorably with the cost of Mid-Continent crude, plus the pipe line charge to the same points.

For coastwise movement, the oil could be loaded on tankers for 0.50 to 1 cent more per barrel. One company already has moved considerable East Texas oil by tanker to the east coast, it is said.

Since the reduction in Mid-Continent crude prices March 5, there is only about 3 cents difference between the cost of North Texas oil delivered to Dallas by pipeline, and East Texas oil delivered to the same point by tank car.

A Dallas refiner March 5 was offered East Texas oil at 50 cents a barrel, at the loading rack. His freight would have been 34 cents a barrel, giving him a delivered price of 84 cents. He is paying now 67 cents for North Texas crude, and 20 cents pipeline and gathering charges.

Now that the Atlas pipeline is going to be built, it was the opinion in both Dallas and Shreveport the railroads would attempt to reduce the special rates still more. It would not be surprising to see a rate of 5.50 cents or 6 cents per cwt. established for Longview to Shreveport movement.

Such a rate would compare favorably with the tariff which the pipeline company was understood to have decided upon. The pipeline tariff, it was said, would be 17.5 cents a barrel, and 5 cents a barrel gathering, making the delivered price 22.5 cents. A rail rate of 5.50 cents, such as exists in some places in Oklahoma, would be approximately 22 cents a barrel, inclusive of a 5-cent gathering and loading charge.

IF THE rate to Shreveport is reduced, there is every likelihood that the rates to other points in Texas, Louisiana and Arkansas will also be reduced. In such an event the East Texas crude would be more desirable even than it is at the present time.

At the present time there is no rental on tank cars, one refinery traffic man said. As the demand increases, however, it is likely a rental charge will be made. This traffic man said his company had estimated the rental would amount to about $12.50 a month more than the mileage a car would have in five trips a month from Longview to Shreveport. It was estimated on that basis that the car would cost about $2.40 a trip, or that the rental would be a little more than 1 cent a barrel.

As for the refined oil rates from the East Texas district, they are in a worse scramble than crude oil rates. There are no refineries there as yet, but construction has started on at least four and possibly five by this time, and traffic men have been working with railroad officials in an effort to get some rates established.

AT PRESENT there are no rates, other than mileage ones, from the new producing area to various marketing centers, except an export rate of 20.5 cents for gasoline from Kilgore and Henderson to Gulf terminals. That 20.5-cent rate is identical with the export rate from north Texas to Gulf points.

Traffic men are of the opinion the new district will be grouped with the Shreveport-El Dorado refining group, either on a parity or at a slight differential over that district. One or two traffic men expressed the opinion the rates would be based on the North Texas rates plus a slight differential; but not as large as the differential the Shreveport-El Dorado district has over the North Texas area.

Traffic men for the East Texas Refining Co., which will have plants at Longview and Henderson, have been working with the Santa Fe rate men for favorable rates into Louisiana, Mississippi and other differential territory now served by the Arkansas-Louisiana refiners. No rates have yet been announced, however. Since that company probably will have the first refinery in operation in that district, whatever rates are provided for them undoubtedly will be met by the railroads which will serve the other refineries as they are placed in operation.

Co-ordination of Imports with Proration Sought by Administration

By A. E. Heiss

N. P. N. WASHINGTON REPRESENTATIVE

WASHINGTON, March 9

IN ALL the legislative history of the United States probably, no interest has achieved so much and so little, at the hands of Congress, as have the Independent oil producers the past year.

When Congress adjourned March 4, the independents suffered their second defeat within a year. They failed last spring in their effort to obtain a tariff duty on petroleum and its products. They failed again this year on three points; they secured no tariff, secured no embargo and were denied the inquiry into the industry which they asked.

Yet within 48 hours of the adjournment of Congress, the Hoover administration announced it was in negotiation with the oil importing companies with a view to restricting imports. Progress had been made in that direction, it announced, the Standard Oil Co. of Indiana alone holding back.

Restricting imports is not the way the administration describes its efforts. Bringing about a "more harmonious relationship between imports and home production" is the language it employs.

The fact is, however, that President Hoover and his advisers, after holding, as they said, a neutral attitude while the independent producers were trying to obtain restrictive legislation, are now seeking to accomplish the same end through agreement among the importing companies.

This move on the part of the administration came to light March 5 at just about the time that Russell B. Brown, secretary of the executive committee of oil men left in Washington after the conference Jan. 15 called by governors of oil states west of the Mississippi, was packing his clothes to return to Oklahoma.

"Secretary Wilbur, chairman of the Federal Oil Conservation Board, stated this afternoon that Secretary (of Commerce) Lamont has been in conference for some days with the various companies importing oil into this country in the hope that a more harmonious relationship between imports and home production could be worked out," the administration announced.

"The Mellon interests and the Standard of New Jersey have already decided to go as far as they can in assisting our own producers. Other companies seem willing to agree, with the exception of the Standard of Indiana, which, for some reason, has not as yet expressed a willingness to meet the situation.

"THE President sent the following telegram in answer to that of the Governors of the oil producing states sent on March 4:

" 'In respect to your telegram of March 4, Secretary of Commerce Lamont is in negotiation with the larger oil companies in respect to imports in the interest of both the producers and consumers.'—Herbert Hoover."

"The Standard of Indiana is not importing oil into the United States," E. G. Seubert, its president, told NATIONAL PETROLEUM NEWS. "It is the principal stockholder in the Pan American Petroleum & Transport Co., which is one of the importers. At my request, the Pan American is making a careful study of the possibility of curtailing imports. The problem is a very complicated one."

In their effort in Congress, the independent producers asked that imports of crude be limited to 16,000,000 barrels of crude total for three years and that imports of refined products be excluded entirely. They set forth that imports of gasoline for 1930 would amount to about 17,000,000 barrels, which would displace about three times that much domestic crude which would otherwise be used in the manufacture of gasoline in this country. This imported crude and gasoline was a large factor, they set forth, in the present distress conditions in the oil industry in this country.

SEEMINGLY, the move on the part of the administration was made in response to the request made to President Hoover following the conference of governors of oil states March 1 at Fort Worth.

From Congress the independents secured a resolution, adopted by the House, on initiation by Representative Garber of Oklahoma, directing the Tariff Commission to investigate the differences in the cost of production of the following domestic articles and of any like or similar foreign articles: Crude petroleum, fuel oil, gasoline and lubricating oils. As to how the investigation shall be made the resolution says:

".....the cost of production of foreign articles shall be ascertained only for foreign articles exported, directly or indirectly, from countries from which there was exported, directly or indirectly, to the United States during the period from Jan. 1, 1929, to Dec. 31, 1930, inclusive, more than two million barrels in the aggregate of crude petroleum, fuel oil, gasoline, and lubricating oils."

The tariff board is to report to the House not later than the beginning of the next Congress.

The independents also got, although they did not ask for it, the inclusion of the oil industry in a resolution, offered by Chairman Hawley of the House ways and means committee, authorizing that committee to investigate the economic conditions of the oil, coal, lumber, manganese, asbestos and agricultural industries. Hawley offered that as a joint resolution but converted it into a simple House resolution because Senator Thomas, of Oklahoma, in a despairing effort to force action on the Nye resolution providing for a general investigation of the oil industry, had tied up the Senate with a filibuster that lasted until adjournment.

THE Oklahoma senator got the floor Tuesday evening March 3 and talked until after 1 Wednesday morning. The Senate, with the consent of the Oklahoma senator, then took a recess until 9 Wednesday morning with the distinct understanding that he should have the floor at that hour to continue his filibuster. Thomas stuck it out until the gavel fell skilfully warding off all parliamentary thrusts to take him off his feet.

At one point a senator begged permission to get the nominations of postmasters confirmed.

"I cannot yield," said Thomas. "These postmasters will have jobs whether they are confirmed or not. I am talking for men who have no jobs, men wearing clothes like these, greasy and ragged and not knowing where they are to get money for the support of themselves and their families."

The senator held up a pair of ragged and greasy overalls which might have been worn by an oil field worker. Cynics said it was the same pair of overalls exhibited earlier by Senator Caraway as having been the best that could be afforded by Arkansans in the drought area.

Senator Thomas said that a photograph of the overalls would be reproduced on celluloid buttons surrounded by the words "Paramount Issue in 1932." After the end of the session Senators Thomas and Capper said the fight would be renewed next winter.

Such an outcome of the fight, almost any one familiar with legislation will admit, is little—almost infinitesimal.

Yet, if they had not made the fight, it is believed, the administration would not have initiated the negotiations looking to a "more harmonious relationship between imports and home production."

But even that is not the big accomplishment. The big fact is that the independents have put their cause into a position where Washington knows a good deal about the matter.

Fifteen months ago Washington, meaning public men and the reporters of their doings, did not know a thing about the friction that frequently arises between factions in the industry. Oil was the all-inclusive term and, sad as it may seem to men in the industry, meant merely the fictional creation, "the oil trust."

It is doubtful, notwithstanding declarations to the contrary, whether any one will undertake to make a tariff fight in the Congress that came into power at noon March 4 but will not meet in regular session until next December. That declaration, however, is based on form and form alone. The independents, in their two losing fights, did not fight on form. Nor did they confine their appeal to the men, who, on supposed principle, are adherents of the protective tariff theory. They cut across lots. They achieved the distinction of having the Democratic leader of the House, nominally a low tariff man on principle, take up cudgels for them, backed by low tariff governors.

THE election last fall increased the number of nominal low tariff men. Garner, of Texas, the Democratic leader, at this time, stands as good a chance of becoming speaker of the House as Longworth, of Ohio, has of retaining that office, however. The two parties are as nearly equal in number as possible, the balance of power being held, as has been the fact in the Senate for many years, by insurgent Republicans from Wisconsin and a Farmer-Laborite from Minnesota.

If the anti-Republicans acquire a working control of the House, the leaders of such a coalition, for political reasons, might decide to open up the tariff question to frame a measure to embarrass President Hoover. The political waters will be muddy enough for any sort of fishing. Meeting on the eve of a presidential campaign, there will be more politics in the sessions of the next Congress than in any recent Congress because of the close division of the two major political parties.

THE move made by the administration to have the big oil companies resist their imports is taken to signify it will do everything possible, short of legislation such as the independents sought, to mollify the independents.

Secretary Wilbur is expected to push forward again his state compact idea as a solution for the internal difficulties of the industry. In fact, in commenting on the meeting of the governors at Fort Worth, he suggested that probably the oil state governors, by this time, were forced by events to think more about his suggestion along this line. Without compacts such as made possible the Boulder Dam development, Dr. Wilbur believes the industry can not achieve stability in production.

Prairie Enlarges Board

INDEPENDENCE, Kans.—The Prairie Pipe Line Co. increased its board of directors from five to seven at the annual meeting March 3. F. M. Wilhelm resigned from the board. Henry Lockhart, Harry Bronner and Edward R. Tinker, New York capitalists, were the new members. Mr. Wilhelm is secretary of the company. The officers were re-elected.

Prairie Deliveries Increase

INDEPENDENCE, Kans.—Prairie Pipe Line Co.'s deliveries of crude oil in February were a little more than 4000 barrels daily higher than in January. Shipments for February were 76,702.50 barrels daily, while in January they averaged 71,206 barrels.

Union Cuts California Crude, May Adopt Consignment Plan

By Jack N. Westsmith

N. P. N. STAFF WRITER

LOS ANGELES, March 7 UNION OIL CO. of California has announced that on March 10 it will place in effect a crude oil price schedule that reduces the posted price offered for oil in virtually every California field from 5 to 80 cents a barrel.

In taking the lead over Standard Oil Co. of California, traditionally the leader in such matters, Union questions the economics of accepted marketing practices. It is not willing to maintain a high crude-oil price-structure at a loss even though a reduction in that structure may permit independent refiners to continue manufacturing gasoline to sell in cut-priced competition.

Many small refiners that were being pinched by the low wholesale price of the refined products showed considerable relief at news of the lower crude prices.

W. L. Stewart, vice president in charge of manufacturing and crude oil purchases for Union issued the following announcement in making the cut:

"The posted schedule of prices for crude oil in the fields of this state have been for some time out of line with the values of the crude and of the products obtainable therefrom. The result has been that the marketing companies have not been willing to increase their contractual commitments and crude oil is actually sold in the fields at prices below the posted schedules.

"This company has therefore determined that effective 7 A. M., March 10, 1931, it will place into effect the accompanying schedule of prices which it will pay for crude oil purchased by it in the different fields."

As was to be expected, the cut in the offered price was particularly drastic in those areas where operators have consistently produced oil in excess of their allotments or where increased drilling activity threatens proration programs.

Union does not post a price for crude from either the Elwood or the Ventura Avenue field. At Santa Fe Springs, perhaps the principal transgressor in the matter of overproduction, the price ranges from $0.65 for 19-19.9 gravity to $0.98 for 40 gravity and above. Based on previous schedules that started at $0.92 for 21-21.9 and had a top figure of $1.78 for 38-38.9 gravity, the cut at Santa Fe Springs ranged from $0.25 to $0.84.

S. O. California Meets Union Cut

(By Telegraph)

SAN FRANCISCO—Standard Oil Co. of California on March 10 reduced prices of all California crude to conform to those posted by the Union Oil Co. The cuts range from 5 to 80 cents, depending on gravity.

With the exception of Kettleman Hills the reduction in other fields was less severe ranging in the neighborhood of $0.05 to $0.60 per barrel on the low and high gravity crudes, respectively.

At Kettleman Hills, where activity on fee lands not included within the Kettleman North Dome Association threaten to put a burden on Pacific Coast markets, Union initiated a flat posted price of $0.90 for all oil of 40 gravity and above, a reduction of $0.75 per barrel.

Although no announcement has been made by other major Pacific Coast purchasing companies, indications are that they will meet the cut before it becomes effective, March 10.

Before the annual meeting of stockholders held earlier in the week, L. P. St. Clair, president of Union Co. said the recent reductions in local gasoline prices were the steps of the industry to correct a condition of overproduction from the marketing standpoint.

Mr. St. Clair also commented on the fact that gasoline prices today were back where they were last July, and where they should have remained, if necessary to bring about a stabilized marketing structure in this division of the country.

At this time Mr. St. Clair predicted that a continuation of the gasoline-war would necessitate a downward revision of the crude oil price structure, and that only then will it be possible to place the burden of the lower price refined products on the shoulders of those producers responsible for the overproduction of crude oil in the state.

It is not thought that the reduction in crude prices will effect Union's recently announced notice of discontinuing to purchase oil on a day-to-day basis and the possibility of instituting a consignment plan for purchasing crude. If anything it is thought likely to help the formulation of such a plan.

Previously the company had served notice that effective March 7 it would discontinue purchasing crude oil at the posted market price. This new policy applied only to oil be-

ing purchased on a day-to-day basis and did not affect period contracts.

Executives of the company would not disclose the quantity of crude involved in the action other than to say it was not any considerable amount. Plans are still tentative as to the next step, but it is understood one of two moves is possible.

Either the oil included in this classification will be purchased at a price determined by market conditions, or contracts will be offered whereby Union will act as an agent for the producer in handling, refining and marketing the manufactured products.

The latter move would, with improvements, be patterned after the consignment plan of purchasing recently adopted by Richfield Oil Co. under the leadership of William C. McDuffie as receiver. The trend of modifications from the Richfield plan is still doubtful, but it is understood the producer would be charged a flat rate for the operations of transporting, refining, and handling various grades of crude instead of a charge determined by actual accounting, as provided for in the Richfield plan.

This would permit the producer to determine readily the return on his crude from day to day based on the market price of the refined products, after deducting a commission to the refining company as agent.

Although the period contracts will not be affected by the new plan it is hoped that when such contracts terminate the producers will be encouraged to join in. Details are expected to be in working order within the week provided this method of handling the crude is adopted.

This action on the part of Union is thought to be a prelude to similar actions by other large purchasers of crude on the Pacific Coast. Several have indicated a change was necessary in order to equalize the crude and refined oil price structures.

Rumors of a reduction in the crude structure had been prevalent before the Union announced its cuts for March 10. It has been thought by some that the major purchasing companies may discontinue posting prices for crude oil at the well. This would tend to suspend contracts based on these posted prices and make it possible to work out a new method of purchasing, possibly along the lines suggested by Union and adopted by Richfield.

Actual figures have not been announced, but it is understood that under present price conditions in the retail gasoline market, those producers supplying crude to Richfield under the consignment plan will receive between $0.55 and $0.65 per barrel for crude instead of $1.12 to $1.38 for oils ranging from 24 to 30 degrees gravity. With the flat charge of 1 cent per gallon on gasoline and 5 cents per barrel on fuel oil and gas oil sold under this plan coming into the refining company, the burden of the gasoline price-war is placed on the producer.

Lease Bidding Active on Ocean Front at Huntington Beach

LOS ANGELES, March 6

ACTIVE bidding for drilling sites along the ocean at Huntington Beach has been reported as a result of recent deep drilling.

Consistent reports of oil sand and gas pressure in Fee No. 1, a deep test of the field drilled by Superior Oil Co. started a revival of interest in deeper zone possibilities that was not dampened when Superior suspended operations at 7491 feet a month ago.

Since then encouraging reports have been circulating about showings found in Transport No. 17, drilled by W. E. McCaslin. During the week this well was reported below 7300 in hard sand streaked with brown shale.

Pending developments in the McCaslin well, Superior will delay operations. However, Wilshire Oil Co., one of the largest of the small independents is reported ready to start deepening of four wells in the Huntington Beach field when assured the lower horizons are commercially productive.

The westerly section of the Long Beach field promises to put this area, now classed with the "has-beens," back into the production limelight. A well drilled by E. J. Preston came in for an initial yield of 900 barrels daily from about 5200 feet, and on a later gauge was estimated to be making in excess of 1100 barrels over the 24 hour period.

Preston's well was bottomed in a zone heretofore passed up in favor of deeper horizons. Townlot operators, always quick to follow an important strike, are expected to start immediate operations to develop the shallow zone.

Other less impressive completions averaging about 400 barrels each per day boosted the field's output above the 91,000 barrels mark. Activity that has centered on the southeasterly flank and in the Los Cerritos section of this field continues to fall off under the influence of encroaching waters and non-productive sands.

Water troubles also proved a source of anxiety to operators in overdeveloped townlot areas of the Playa del Rey pool. During the week production from this field declined to 29,330 barrels, nearly 16,000 barrels under the August peak. Indications were that the output would be less than 20,000 barrels within the month.

In the San Joaquin Valley, Shell Oil Co. was swabbing on a water shut-off test of its Williams No. 1, a well bottomed at 9700 feet in the Semi-Tropic District, southeast of the Lost Hills field. The hole is open below 8580 feet in formation not considered promising for commercial production.

Approximately 15 miles to the northwest, George F. Getty Inc. was reported preparing to drill out the cement on a well drilled to test the productiveness of the Temblor in the extreme northern end of the Lost Hills structure. Heavy fittings and gas traps have been installed preparatory to testing the cement job.

East Texas Proration Step Nearer As Governor Takes Hand

By Paul Wagner

N. P. N. STAFF WRITER

HOUSTON, March 7

MEASURES looking toward proration of crude oil production in the Gregg-Rusk district of East Texas appeared to be a step nearer as the week ended.

Governor Ross S. Sterling disclosed in a telegram to Governor Henry Woodring of Kansas that the Railroad Commission of Texas, in its capacity as the state's conservation agency, had been asked to hold a hearing.

Chairman C. V. Terrell of the commission said no date had been set for a hearing, but that he thought a call would be issued next week. Ten days' legal notice is required for such a call.

Delay in calling a hearing until next week probably means the East Texas situation cannot come before the commission until time of the statewide hearing that will precede the next general prorating period, which begins April 1.

East Texas land and royalty interests, joined by some of the smaller operators, have flouted earlier efforts for curtailment and Carl Estes, anti-prorationist leader at Tyler, has said that it would take the National Guard and Texas Rangers to enforce a production curb[1] prior to April 1.

Governor Sterling's wire to Governor Woodring was in response to a message from the Kansas executive saying he did not feel like asking the Standard Oil Co. of Indiana to rescind its Mid-Continent price reduction of March 5 until something had been done about East Texas.

Mr. Sterling had previously told the Kansas governor that "the action of the Standard Oil Co. of Indiana in reducing the price of crude probably will defeat what we are trying to do. I hope you will ask the Standard to rescind the price reducing order."

That he feels the first move in the stabilization program has to come from Texas was the burden of the Kansas governor's reply. Continuing, he said:

"With 40,000 to 50,000 barrels of oil going on the market from East Texas at considerably below the market price, I do not feel it fair to ask the Standard of Indiana, or any other company, to maintain a higher level.

"I will be glad to join with the other governors in any effort that can possibly be made to restore the crude oil market to its former price when, as and if you stabilize the industry in your state."

President E. G. Seubert of the Standard of Indiana, meantime, had telegraphed Governor William H. Murray of Oklahoma that "the economic situation caused us to cut prices of crude oil" and that "nothing short of fair and united action by all producers in the big producing states will change the present situation."

GREGG-RUSK district production had reached above the 75,000 barrels daily mark and brought the state's total to approximately 725,000 barrels at the end of the week The daily average as shown by American Petroleum Institute figures may be lower; however, next week's figures may go still higher, due to completions of additional large wells and increasing shipments of crude from tank car loading racks.

The present Texas prorating period, which ends at 7 a. m., April 1, and which calls for statewide allowable production of 644,253 barrels daily, does not include the Gregg-Rusk district in its maximum.

Production statistics made available from company sources at the end of the week showed the Longview-Kilgore-Joiner areas of the Gregg-Rusk district had made cumulative yields exceeding 1,000,000 barrels, mostly in the last six weeks.

In addition to the approximately 75,000 barrels daily exploited production additional quantities of flush oil were due to come from 16 wells ready for completion next week.

FOUR tests in the Lathrop area, northwest of Longview, have tested pay sand in the vicinity of the Farrell-Moncrief & Arkansas Fuel Oil Co. discovery, which so far has been the only Gregg county producing well.

Division of acreage among the several interests participating the original Farrell block, plus the development by others of some leaseholds not included in it, will stimulate active development over the next few weeks in the Gregg county area.

South of the Gregg development 18 miles, the Kilgore area of northwestern Rusk county, has been proved for production a width of two miles from east to west. Producing wells belonging to other interests to the west, south and east of the Humble Oil & Refining Co.'s 1500-acre Crim block has virtually proved it in its entirety for production. This is the block surrounding the Ed. W. Bateman discovery, for which

[1] National Petroleum News, page 39, March 4, 1931.

Humble paid $1,500,000 cash and $600,000 contingent consideration.

Protection of the Humble's lease boundaries on all sides will eventually result, the situation being further aggravated by winding stream boundaries and irregularities of surveys on the north and west edges of the block particularly.

There are now approximately 50 wells producing in the Gregg-Rusk territory, including one in the Longview area, upwards of 30 in the Joiner district and approximately a dozen in the Kilgore vicinity. The Joiner area is nine miles south of the Kilgore and the Longview area is 18 miles north of the Kilgore development.

Geologist Predicts 10,000-Barrel Acre Recovery in East Texas

TULSA, March 7

PREDICTING an average per acre recovery of 10,000 barrels in the new East Texas field, and an ultimate total production of 480,000,000 barrels, Dr. W. C. Spooner, consulting geologist of Shreveport, La., presented a rather optimistic view of this area before the Tulsa Geological Society, March 6. The title of his paper was "Stratigraphy of the Sabine Uplift" and Dr. Spooner drew some interesting conclusions regarding the geologic history of the region.

The entire producing area of this new pool was estimated by the speaker as being 30 miles in length and from two to three miles wide. This huge structure was not thought to contain a number of pools as is usually the case in domes of this size, for, considering the character of the producing horizon, the Woodbine sand, and its conjectured stratagraphic relationship with the basement uplift, the entire structure seems likely to be productive as a unit pool.

There will be of course, the usual tight spots and areas of high productivity but in general they will not be divided by more or less regional saddles or wide barren streaks, as are the various pools of the Texas Panhandle. A fairly uniform and continuous pool was indicated.

Dips to the west of from 25 to 40 feet to the mile and a thickening of sediments in that direction, lead to the conclusion that deposition came in at that side of the structure. However, the fact that the top of the dome is covered with shale which grades off into sand on both the east and west, has introduced some rather complex questions. Up to the present time only the west side is productive but the gradation is the reverse of that usually found. In similar structures elsewhere a single stratum will have the sand on the top of the structure and the shales at the side.

Dr. Spooner estimated the average porosity of the pay horizon to be about 18 per cent as indicated by the samples taken from the wells already drilled. With an average thickness of about 20 feet and a recovery comparable with that in the same horizon in Arkansas of 35 per cent, the estimated per acre yield should be in the neighborhood of 10,000 barrels. The average in north Louisiana is about 6000 barrels. On the basis of these estimates and considering the projected size of the area, a possible total recovery of 480,000,000 barrels was postulated.

Another interesting question was raised in the discussion of well temperatures. A certain well was cited in which the temperature of the fluid raised from 75° to 135° F., in 48 hours of flow at the rate of 10,000 barrels per day. On being pinched in to a considerably smaller flow of temperature declined somewhat though it was not stated whether it reached its former level. Though temperature changes of this size, and particularly of this magnitude are usually associated with water encroachment, Dr. Spooner expressed himself of the opinion that in this instance he did not believe that water was responsible.

Earlier in the week the society had heard a paper by Eugene McDermott, vice president of Geophysical Service Inc., who reviewed the functions of the various geophysical instruments, with particular reference to the seismograph. The speaker outlined in detail the uses of the latter instrument in correlation work and presented some concrete data in the way of operation costs. Total survey expense per month, during which time it is possible to make from 80 to 90 depth determinations, was said to average about $12,000.

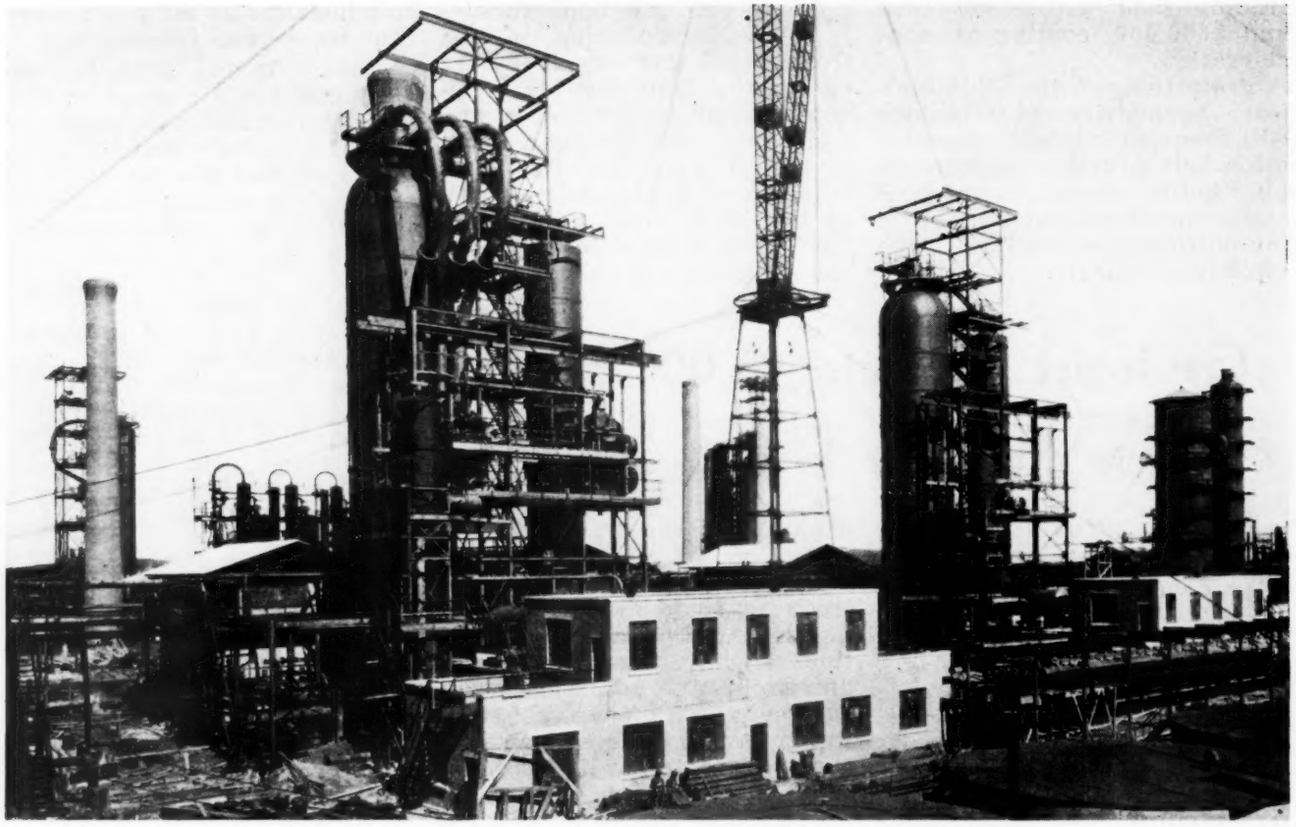
Buys Wewoka Properties

TULSA, March 7.—Mid-Kansas Oil & Gas Co. has purchased from the Ramsey Petroleum Corp. its half interest in 472 acres of leaseholds in the Wewoka townsite pool, Oklahoma. Most of the acreage is regarded as proven. The sale, consideration of which was not made public, did not include settled production in the nearby Wewoka pool belonging to the Ramsey company.

Colombia to Restore Gulf Concession

NEW YORK, March 7.—Advices from Bogota are that the Colombian government has restored the famed Barco concession. This property, lying near the Venezuelan boundary, east of the Magdalena River, was granted years ago to the Colombian Petroleum Co., control of which was later acquired by the Gulf Oil Corp.

The concession, considered one of the most valuable in Colombia, was cancelled five years ago. Failure to develop and produce was the reason alleged by the government. The contract for restoration has been signed by the president of Colombia and is expected to be ratified by the congress. It will permit resumption of operations within 60 days. The original concession covered more than one and one-half million acres; as restored it will cover one million acres.



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Conditioning Refinery Water

Comparison of Zeolite and Chemical Type Softeners; Choosing the Softener; Boiler Compounds; Water for Cooling and Condensing

By Sidney Born*

Part 5

THE choice of the type of softener to be used for a particular installation depends primarily on the analysis of the water itself, but there are other factors which influence it and which we have tried to discuss during the course of this paper. We shall, however, attempt here to point out some of the more important differences between the chemical type softener and the zeolite type.

The zeolite softener will reduce the total hardness of the water to a very low point, usually less than two-tenths of a grain per gallon. The hot soda lime softener will produce treated water having a hardness of not to exceed 0.5 grains, whereas with a cold lime soda softener the hardness will run from two to three grains, although by the use of sodium aluminate this may be reduced to a figure somewhat lower than this.

The total soluble solids in a zeolite treated water will be approximately the same as in the raw water, whereas in the chemical type softener the soluble solids are reduced. Waters which contain large amounts of sodium salts may sometimes be softened more satisfactorily with a lime soda softener or lime barium softener than by the use of zeolite, also waters high in bicarbonates can usually be treated more satisfactorily with the lime soda type of softener than by the use of zeolite.

In some cases combination systems involving both the use of lime soda and zeolite softeners have been installed and worked very satisfactorily. Such a combination is particularly suitable for waters containing considerable quantities of calcium bicarbonate, as well as calcium sulfate. In this case lime is used to remove the carbonate hardness and the zeolite to remove the sulfate.

The principal advantages of the zeolite type softener are the fact that it more completely removes the calcium and magnesium salts and that it will operate more satisfactorily with waters where the hardness is constantly fluctuating, also with the use of the zeolite type softener no additional pumping of the water is necessary as the pressure drop through the zeolite type softener is usually small.

Offsetting these advantages are the fact that the zeolite softener cannot be operated economically with waters having high concentration of calcium and magnesium salts; that the soluble salt content is not reduced which results in an increased amount of boiler blow down. Also zeolite softeners cannot be used to treat waters containing acid or suspended matter unless the water is subjected to a preliminary treatment.

WE BELIEVE that the above will indicate some of the more important factors to be considered in selecting a softener, but it is always well to leave the final decision on such a matter to a water purification expert who can prepare careful estimates of both installation costs and operating costs of the type of softener best adapted to suit the particular condition encountered.

*Marathon Oil Co.

Boiler Compounds for Internal Treatment

The object of any feed water treatment is to remove scale forming, corrosive or foam producing substances from the feed water. It is obvious that any boiler compounds or other internal treatments cannot remove any scale forming or foam producing substances. The only result of such internal treatment is to convert scale forming materials into sludges which can be removed by boiler blow down.

THERE are cases where internal treatment has improved boiler operation, and in some cases corrosive conditions can be successfully handled by such treatment. In general, however, any feed water treatment should be carried out outside of the boilers where it can be properly controlled by chemical analysis and where the scale forming and foam producing substances are actually removed before the water enters the boilers.

Many instances have been reported where boiler compounds failed to accomplish their purpose. Powell reports* a case in which the use of a well known, widely advertised boiler compound resulted in a serious corrosion after 30 days use. It should also be borne in mind that many boiler compounds cause sludge formations which have high heat insulating value and result in consid-

*(Boiler Feed Water Purification, McGraw Hill Book Company, 1927.)

erable loss of efficiency in heat transfer.

Therefore while the use of internal treatment is not recommended, if it is necessary to use compounds for internal treatment, they should only be purchased from a reputable manufacturer who will prepare a specific formula for each individual condition. Even with these precautions, variations in the composition of the feed water supply must be closely watched and the treatment varied to suit the changing conditions.

Water For Cooling and Condensing Purposes

There are few refineries of any size which do not have a water treating plant of some type to condition the feed water used for boiler purposes, but not many refineries make provision for conditioning the cooling and condensing water. It is too often assumed that if the water available is corrosive or scale forming that the cost of treatment for this purpose is too expensive to warrant any work being done along this line.

Water for cooling and condensing purposes may be classified according to the type of impurity that it contains. The accompanying table shows the various impurities liable to be present, the resulting action on condenser coils and a briefly suggested remedy for treating the particular type of impurity encountered.

If water contains large amounts of suspended matter, mud, silt, etc., it may be purified either by settling basins or filtration with the aid of a coagulant similar to the method described under boiler feed water treatment.

The formation of scale on condenser surfaces is often responsible for inadequate cooling with resulting loss of vapors, or else excessive amounts of water may have to be circulated, resulting in increased expenditures for power. The enormous insulating effect of even a small scale deposit is illustrated in the accompanying graph.

The K value of cast iron is 27, that is, a piece of clean cast iron will transmit 27 B.t.u.'s per square foot per degree difference in temperature per inch of thickness. Assuming that the average condenser pipe is one-half inch thick, the K value would be 54 for one-half inch thickness. The K value for a gypsum deposit one inch thick would be 1.2, that is, a gypsum deposit one inch thick will only permit 1.2 B.t.u's per square foot per degree difference per hour to be transmitted.

To determine the effect of various thicknesses, we refer to the diagram. Following the vertical line at a thickness of one tenth inch deposit of gypsum until we cross the curve, we find that 42 of the 54 B.t.u.'s possible would be retained in the liquid to be cooled and only twelve B.t.u.'s would be transmitted. In other words, a gypsum deposit of even one-tenth of an inch thick on a condenser surface will cut the effective cooling area approximately 78 per cent.

While scale formation is very undesirable from a heat transfer standpoint, there are cases in which a thin adherent scale coating may act as a preventative of corrosion.

If the scale consists of magnesium or calcium carbonate, it may be removed either with lime treatment in a cold water softener or else by means of a zeolite treatment. Zeolite treated waters are apt to cause corrosion unless a corrective treatment is applied. If zeolite treatment is used, the pH value of the zeolite treated water should be raised to a value of approximately 10 by the use of sodium hydroxide, or if an alkaline boiler blow-off is available, this may be used to correct the pH value of the treated water.

If calcium sulfate is present this may be removed by the action of sodium carbonate or by the use of a zeolite softener. In case of a zeolite softener acting on calcium sulfate, no further corrective treatment is necessary.

Mineral acid, such as sulfuric acid, can be neutralized by a treatment with sodium carbonate or sodium hydroxide.

If magnesium chlorides or sulfates are present, they may be removed by a lime and soda ash treatment as described under the treatment of boiler feed waters or else by a zeolite treatment.

If condenser waters are subject to contamination by oil, it is quite necessary to have efficient separators to remove all oil and in some cases it is even necessary to use pressure filters with the aid of a coagulent. Very often condenser boxes and coils are covered with a growth of algae which acts as an effective insulating coating and results in a very appreciable loss in cooling efficiency. Algae can be controlled by the use of small amounts of cop-

Impurities Present in Cooling Water and Method of Removal

Impurity	Action	Suggested Remedy
Mud, Silt, suspended matter	Scale	Settling, filtration with or without aluminum sulfate.
Magnesium or Calcium bicarbonates	Scale	Lime or zeolite.
Calcium sulfate	Scale	Sodium carbonate or zeolite.
Mineral acid	Corrosion	Neutralization with sodium carbonate.
Magnesium chloride or sulfate	Corrosion	Lime and sodium carbonate or zeolite.
Oil	Film	Separation—filtration.
Algae	Film	Copper sulfate or chlorine.
Dissolved oxygen	Corrosion	Protective film or increase pH value.

WHERE THE GOING IS ROUGH—

THE Phillips Petroleum Company pipe line from Borger, Texas to Kansas City and St. Louis, Mo. passes through rough and rocky country. Where it travels through the Dixon Creek Canyon the pipe at times seems to stand on end. Bends are numerous. Labor costs are high.

Under such conditions the selection of Republic Electric Weld Pipe was a logical one. The tensile strength of this pipe is higher. It is also more uniform, due to uniformity in wall thickness, clean small grain structure of the metal, and the high efficiency of the weld. All these factors tend to make for safety and ease of bending in the field. Also, long lengths, up to 50 feet, minimize joints and permit bends to be made with only about half the joint interference usually encountered.

Republic Electric Weld Pipe—more than three thousand miles in service—without a claim—a remarkable record.

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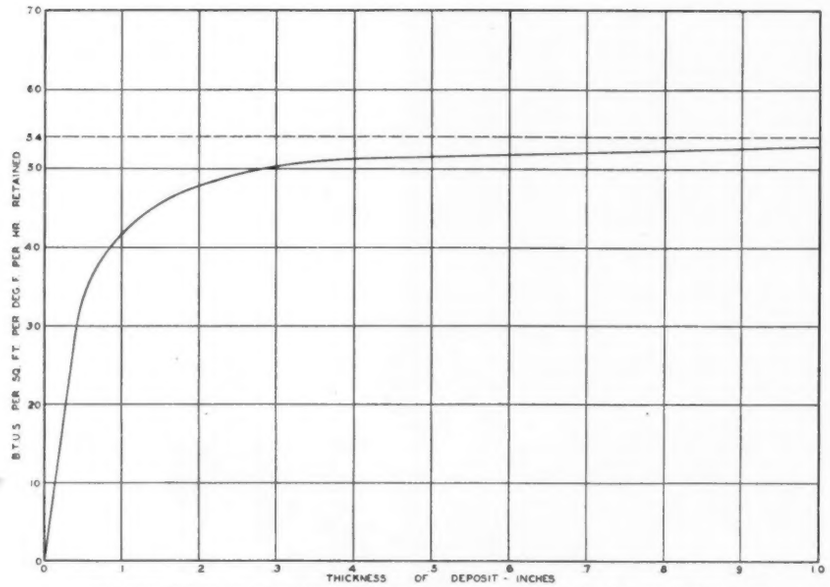

INSULATING EFFECT OF INCREASING GYPSUM DEPOSITS ON 1/2 IN THK C I CONDENSER PIPE

per sulfate or chlorine. In case of copper sulfate, about one part per million is sufficient to give effective control.

Corrosion of condenser coils, boilers and other refinery equipment by corrosive waters is often a serious problem. While it is impossible in a treatise of this sort to adequately present all the factors influencing corrosion, we shall try to point out the most salient factors affecting corrosion of metals by natural waters. For further details the reader is referred to the following.*

Corrosion is evidenced by pitting and disintegration of the metal and in every case involves a solution of the metal, that is, conversion of an insoluble metal to a soluble metallic iron. The solution of a metal can be represented by the following equations.

$$Fe \text{ (Metallic iron)} + 2\ 2H \rightleftarrows Fe^{++} \text{ (ferrous iron)} + H_2$$

The above reaction would soon reach equilibrium and no more iron would go into solution unless some hydrogen was removed from the reaction zone. One way of accomplishing this is by oxidation of the hydrogen as follows:

$$2H_2 + O_2 \rightleftarrows 2H_2O$$

This reaction takes place in the presence of certain catalysts, and explains the important role that dissolved oxygen plays in accelerating corrosion.

There are two other important factors that influence corrosion, one being the pH value and the other composition of the metal itself.

Some of the more important factors that influence corrosion by natural waters are:

1. Corrosion of ferrous metals in proportional to the oxygen content of the water.

2. Corrosion of ferrous metals is more rapid in acid (pH less than 4.3) than in neutral (pH 4.3 to 10) solution, and still less in alkaline solution (pH over 10).

3. Corrosion is most rapid at first, gradually decreasing in intensity, especially in alkaline solutions.

4. The presence of calcium and magnesium salts and siliceous compounds influence the character of the rust formation. A uniform adherent rust formation decreases corrosion by forming a protective coating, while a loose flaky rust accelerates corrosion and usually results in pitting.

For boiler feed purposes oxygen can readily be removed by deaeration in suitable feed water heaters, but in the case of cooling waters, especially those which are resprayed and recirculated, this is impossible. Every time the water is resprayed it takes up more oxygen from the atmosphere, and the evaporation which takes place also increases the mineral content of the water. Corrosion due to these causes can be controlled by the use of a protective coating with chromates or silicates, or else by increasing the pH value with caustic soda to about 10, which will usually stop the corrosive action.

Another source of corrosion in cooling waters is the condensate from exhaust steam which usually contains considerable CO_2 in solution. This condensate usually has a low pH value due to the presence of carbon dioxide and this condition can be corrected by raising the pH value with caustic soda.

The application of sodium silicate as a protective measure against corrosion has shown some rather interesting results. Solid sodium silicate is quite insoluble in cold water but dissolves somewhat slowly in hot water. If hot water is allowed to flow through a small perforated container holding a supply of sodium silicate, it will gradually dissolve and carry it into the system, depositing a thin film which acts as a protective coating on the pipe for a distance of approximately 200 feet. This film does not increase in thickness but is continually dissolved and replaced.

On cold water systems such as are used in refinery practice the use of liquid sodium silicates are recommended. In such systems the liquid silicate is administered by a suitable feeding device so as to maintain a concentration of about eight parts per million of SiO_2 in the water, *which is equivalent to about 25 to 28 parts per million of commercial silicate having a SiO_2 content of 29 per cent. The above concentrations may be increased or decreased as necessary.

Thresh** reports a case in Paignton Devonshire, England, where silicate protected over seventeen miles of iron mains where great annoyance had resulted from rusty water and frequent cleaning was necessary to prevent stoppages. After the silicate had been used for three days the water became bright and clean and continued in this condition.

*The Chemistry of Water and Sewage Treatment by A. M. Buswell. McGraw Hill Publishing Co., 1927. Corrosion, Causes and Prevention, by F. N. Speller. McGraw Hill Publishing Co. 1926.

*Private communication—C. H. Jeglum, Philadelphia Quartz Co., Philadelphia, Pa.

**Examination of Water and Water Supplies. Publishers—P. Blakiston & Sons, Philadelphia, Pa.

Atmospheric and Vacuum Distillation Of Mid-Continent Crude Oil

By John Primrose*

(*Presented before Western Petroleum Refiners Association, Excelsior Springs, Mo., March 11-13*)

PRELIMINARY to the consideration of some actual operating results obtained in processing Mid-Continent crude, the following brief description of equipment is presented inasmuch as the features which will be referred to have a direct bearing on the results obtained.

It is necessary to heat the crude to temperatures approaching 800°F., or in some cases even higher, to drive overhead the last of the lubricating stock contained in the crude. The construction of the heater is of prime importance to enable these temperatures to be reached without destroying some of the valuable products which are the most easily overheated.

Another requirement is high overall thermal efficiency of the heater to insure the minimum fuel consumption. In addition, the heater must respond readily and positively to changes in adjustment without being over sensitive to small fluctuations in operating conditions, which it is impossible to avoid entirely in plant operation.

Figures 1 and 2 represent late developments in a design now in successful operation which is the result of gradual development extending over the past ten years, to meet more and more exacting requirements. In the earlier designs heat was absorbed from the furnace almost entirely by convection, whereas today nearly all the heat is absorbed by radiation, and convection is only

*Foster Wheeler Corp., New York.

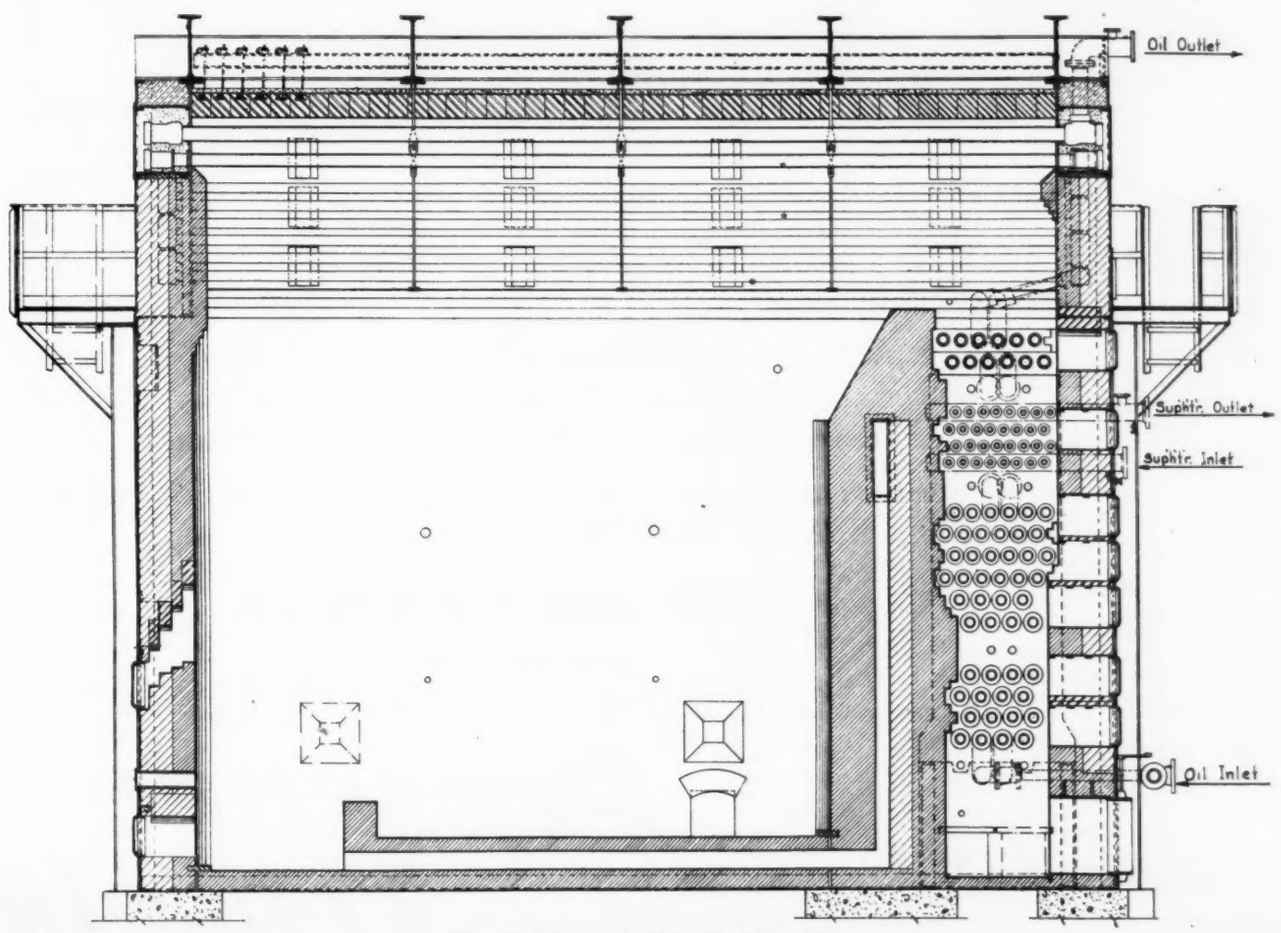

Fig. 1—Cross section of tube still

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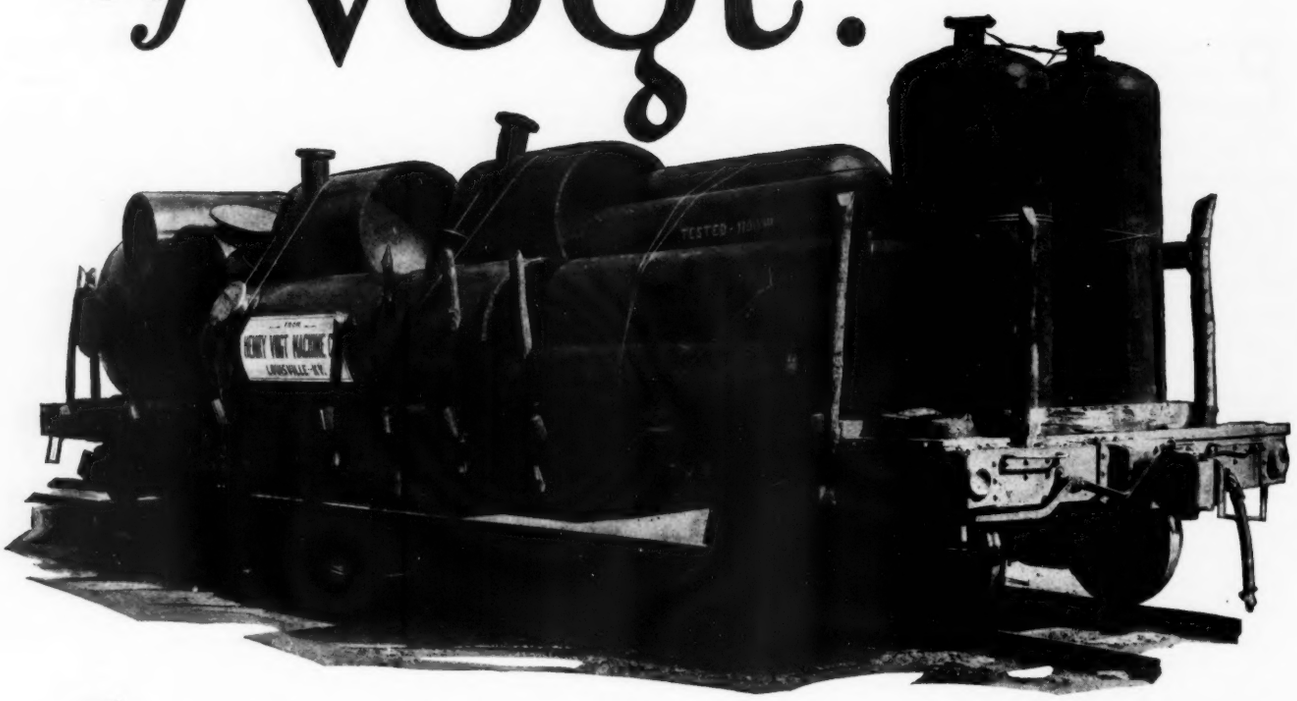

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used to recover heat remaining in the furnace gases after they have been cooled to comparatively low temperatures as a result of heat absorbed through radiation.

Radiant heat absorbing surface is exposed directly to flame radiation and must be sufficient in extent to prevent too high a transfer rate to the oil when the quantity of air supplied for combustion is barely sufficient to insure complete combustion of the fuel. This surface must be located at some distance from the burning fuel so that flame impingement is prevented and concentration of heat rays is avoided. Even distribution of heat rays over the surface exposed to radiation is advisable to secure uniform heating.

The furnace gases, having been cooled through radiation, are then passed rapidly over the tubes of the convection bank, through which the oil to be heated flows in a direction contra-flow to the furnace gas. Thus the furnace gases are cooled to within nearly 100°F. of the temperature of the oil entering the heater and 70 to 80 per cent of the heat value of the fuel is absorbed by the oil. In cases where the temperature of the oil entering the heater is above 550°F., the heat remaining in the flue gas after leaving the heater is often recovered by preheating the air supplied to the furnace for combustion.

Furnace volume is an important consideration, and it has been found desirable in practice to provide for a considerably lower rate of heat liberation than is used in boiler practice. This avoids the intense heat of a boiler furnace and insures uniform absorption essential to uniform and well controlled heating of the oil.

This requirement often necessitates furnace walls of considerable area. These are best constructed of the sectional type, supported on steel and air cooled when the service required of the heater necessitates frequent starting and shutting down. Otherwise solid walls of good material, strongly bonded but with ample provision for expansion, will last indefinitely.

When heating oil to near the critical temperature, it is desirable to supply latent heat of vaporization in the heater as vapor is formed. Otherwise it would be necessary to heat the oil beyond the temperature required to produce the desired vaporization because the latent

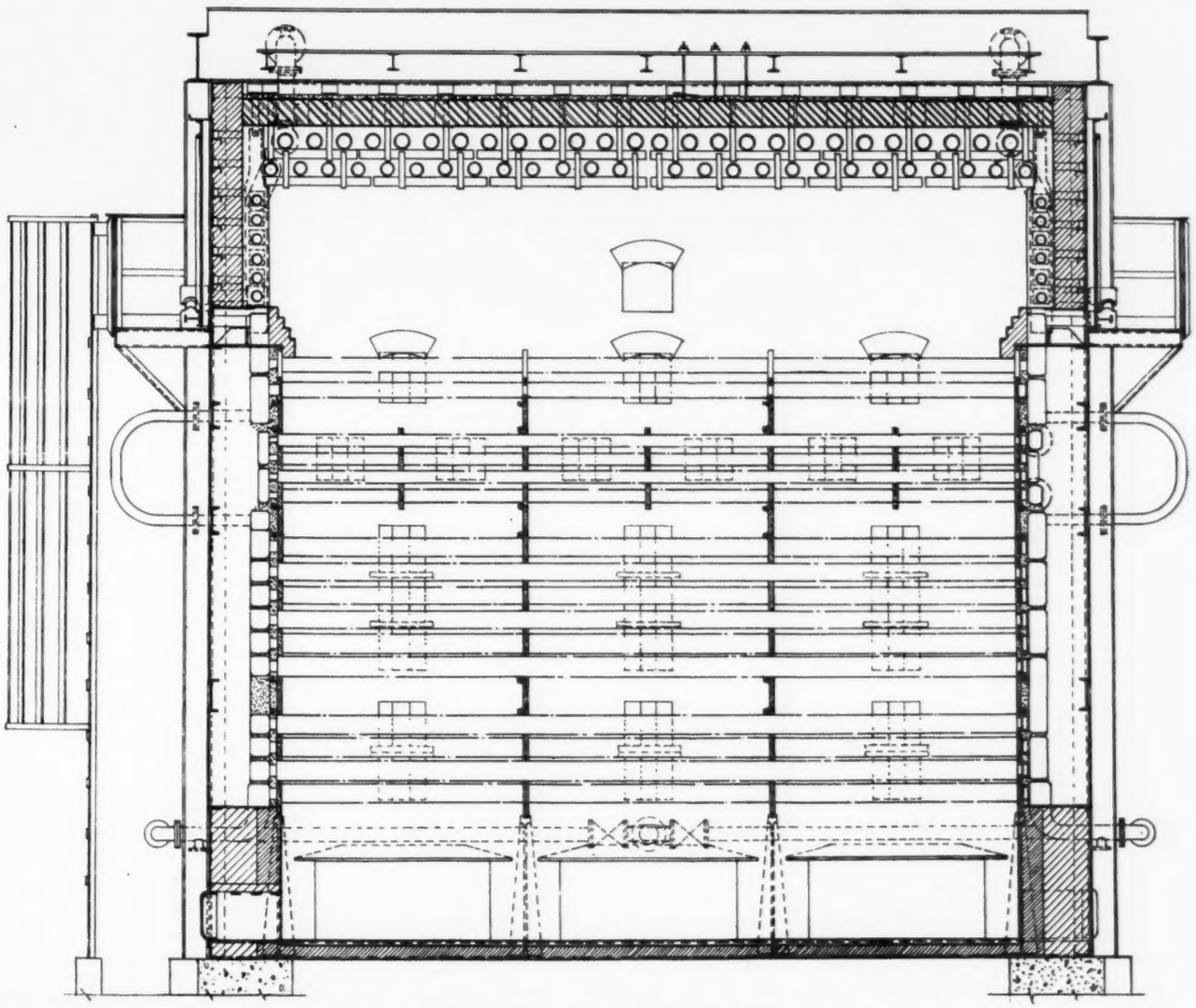


Fig. 2—Cross section of tube still

heat required in the flash chamber can only be supplied by heating the oil in the heater to a temperature in excess of that which is necessary in the flash chamber for the desired vaporization.

By supplying latent heat of vaporization in the heater, the final temperature to which it is necessary to heat the oil is less, but it is necessary to provide room for the increasing volume of oil and oil vapor as vaporization takes place. Otherwise vaporization would be suppressed by the pressure generated. More area for the oil and vapors is provided by using tubes of larger diameter as the outlet of the heater is approached, at which point the greatest volume of vapor exists.

From the heater the hot oil and vapors pass to a vapor separating and fractionating tower of which illustration 3 is a typical example, although of a type used for vacuum distillation. Oil and vapor enter the tower tangentially below the first baffle assembly where the liquid is separated and drops toward the bottom of the tower, passing over several trays in the bottom section of smaller diameter where, in its downward path, it encounters a current of steam, and so is stripped of light fractions.

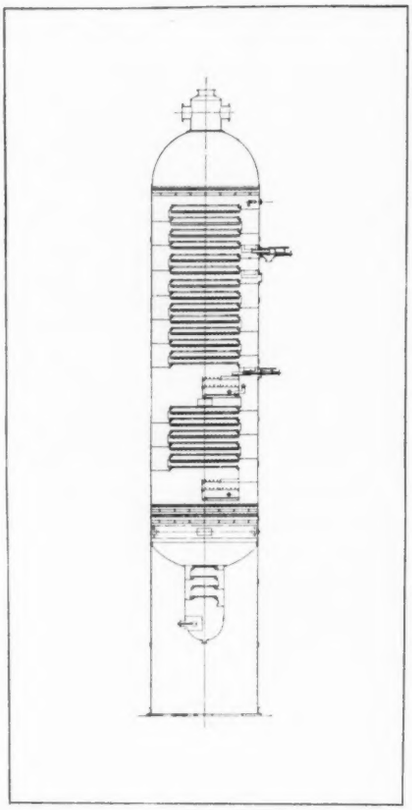


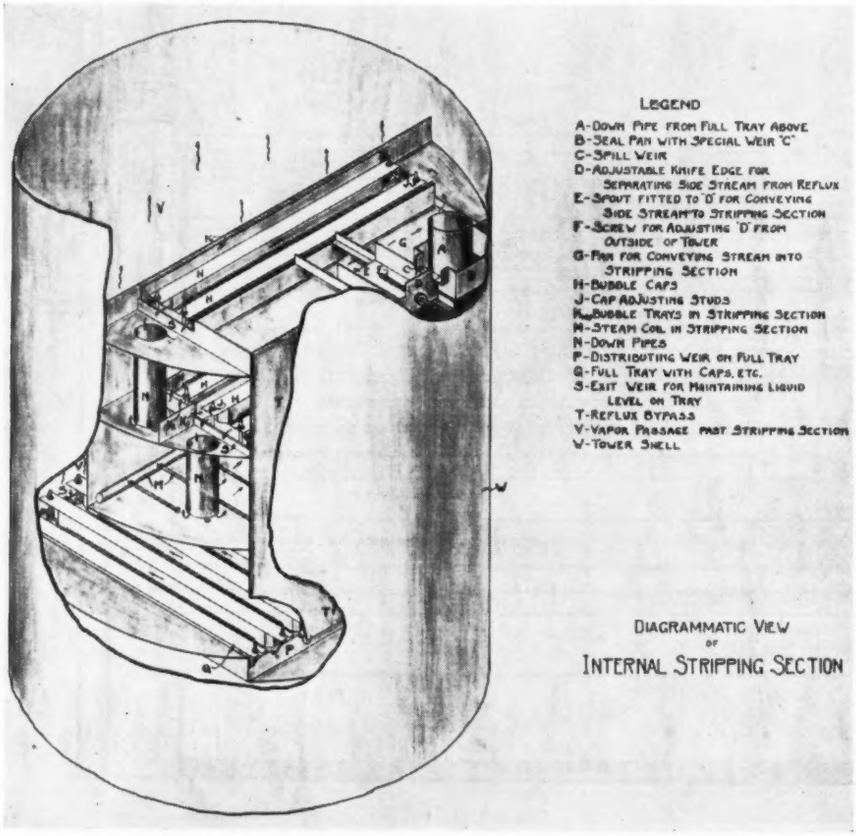
Fig. 3—Cross section of fractionating tower

A float indicator is used to regulate the liquid level which, together with the reduced diameter, insures the hot bottoms being removed from the tower in the shortest possible time. The rising vapors pass through the first baffle assembly and flow on upward through a series of bubble trays. The heavier vapors are condensed by contact with reflux and removed as side streams and only the lightest vapors reach the top, from which they are removed through the vapor line to heat exchangers and condensers.

The top of the tower temperature is controlled by pumping back condensate onto the top tray, producing reflux which flows downward from tray to tray gradually becoming heavier. At intervals in the downward flow of the reflux, side streams are withdrawn either direct from the plate or after passing through stripping sections where, out of contact with vapor passing upward through the tower, the side stream to be removed is stripped of light fractions by steam.

The balance of the reflux not removed as a side stream is bypassed around the stripping section and continues down through the tower. The quantity of the side stream removed is controlled by an adjustable valve which can be set to remove a predetermined proportion of the reflux quite independently of the total quantity flowing down the tower. Thus the valve once set for a given set of operating conditions, it is only necessary to pump back onto the top plate enough condensate to maintain the proper top of tower temperature, as the side streams will automatically, because of these control valves, accommodate themselves to varying quantities of vapor passing up and reflux flowing down.

This arrangement serves to greatly steady the operation of the tower, and requires less supervision and changes in adjustment when the throughput varies. The only points of control then are the heater outlet temperature and the temperature at the top of the tower. The tube still outlet temperature is under the control of the still-


LEGEND
A-Down Pipe from Full Tray Above
B-Seal Pan with Special Weir 'C'
C-Spill Weir
D-Adjustable Knife Edge for Separating Side Stream from Reflux
E-Spout Fitted to 'D' for Conveying Side Stream to Stripping Section
F-Screw for Adjusting 'D' from Outside of Tower
G-Pan for Conveying Stream into Stripping Section
H-Bubble Caps
J-Cap Adjusting Studs
K-Bubble Trays in Stripping Section
M-Steam Coil in Stripping Section
N-Down Pipes
P-Distributing Weir on Full Tray
Q-Full Tray with Caps, etc.
S-Exit Weir for Maintaining Liquid Level on Tray
T-Reflux Bypass
V-Vapor Passage past Stripping Section
W-Tower Shell
Diagrammatic View of Internal Stripping Section

Cut No. 4—Diagrammatic view of internal stripping section

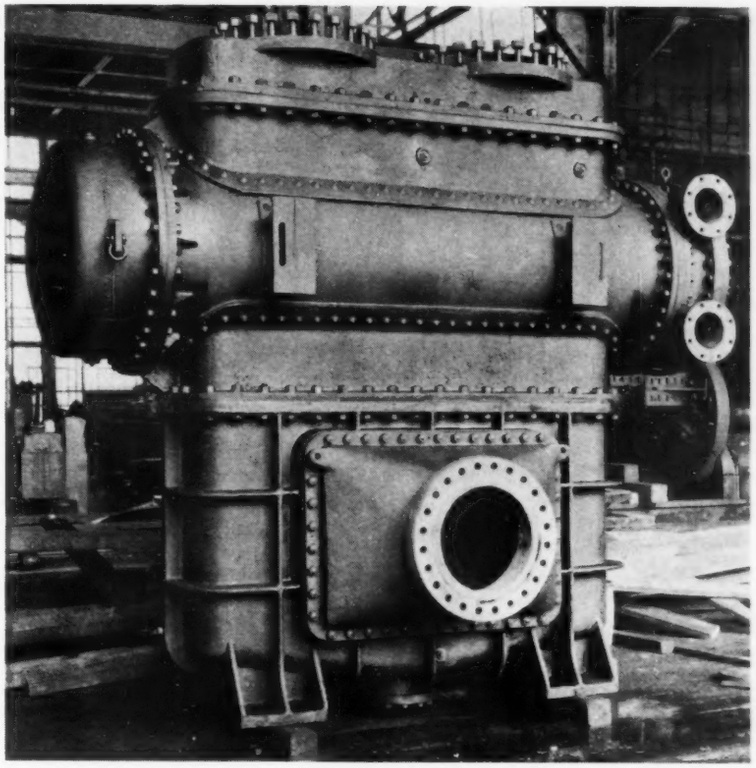
ADVERTISING PARTS REMOVED

man. The top of tower temperature is controlled automatically by instruments provided for that purpose.

A detail of a stripping section previously mentioned above is illustrated by Fig. 4 showing diagrammatically the general arrangement with relation to the tower. Less ground space is required when internal stripping sections are used, as illustrated. Where strippers outside the tower are used, additional steam must be supplied to make up the heat lost by radiation. The chief advantage of the outside stripping section is when the point of take-off of the side stream is uncertain.

In each type of stripper the reflux removed as a side stream flows down over a series of trays meeting an upward flow of superheated steam which gently heats the oil and reduces the oil vapor pressure. The lighter oil vapors and steam are returned to the tower immediately above. The inside arrangement keeps the stripping section in contact with oil and steam vapor slightly warmer than the oil contained, and thereby conserves steam.

The tray construction of the tower is also illustrated. It is important to have a uniform flow of liquid over the plate to insure thorough contacting of the ascending vapor with down flowing reflux. The plates are therefore made up of rectangular sections containing long narrow nozzles covered with caps of the same shape. The



Cut No. 5—Typical arrangement of vapor heat exchanger

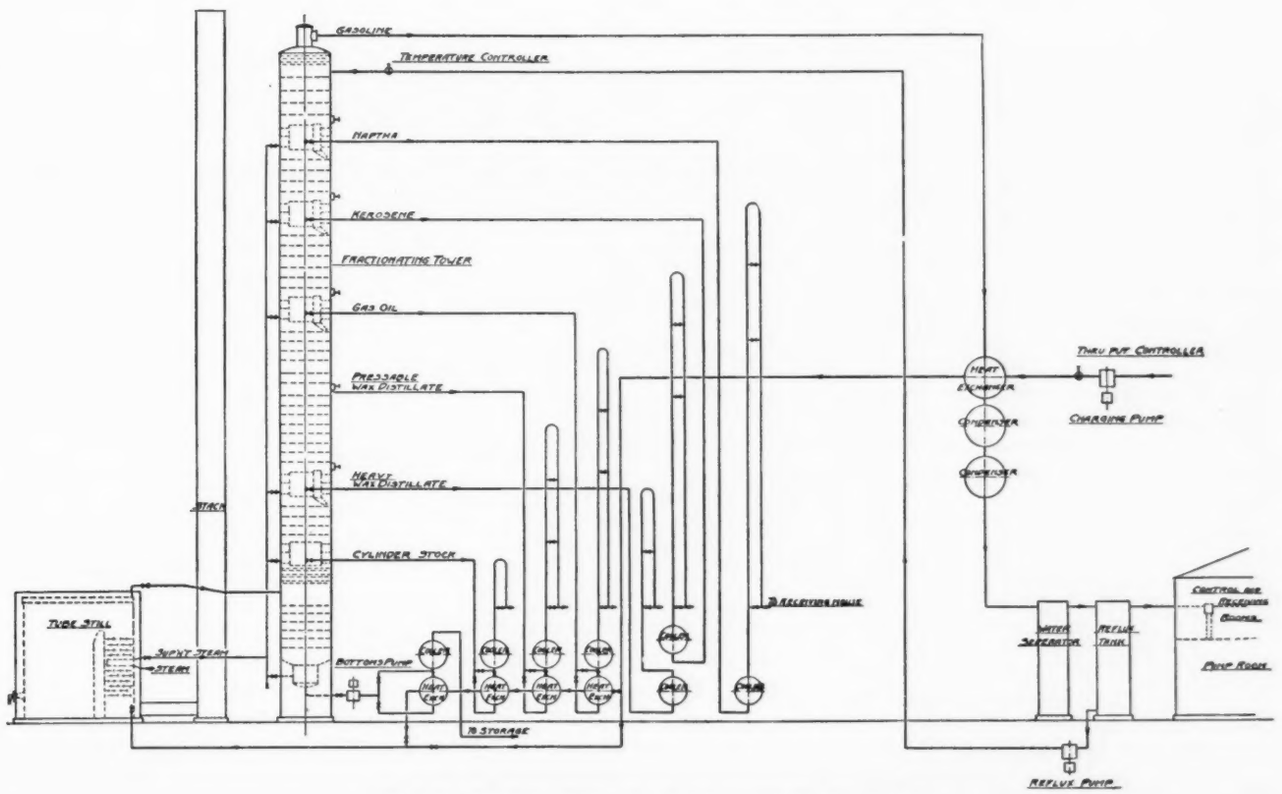


Fig. 7—Typical flow chart of atmospheric unit

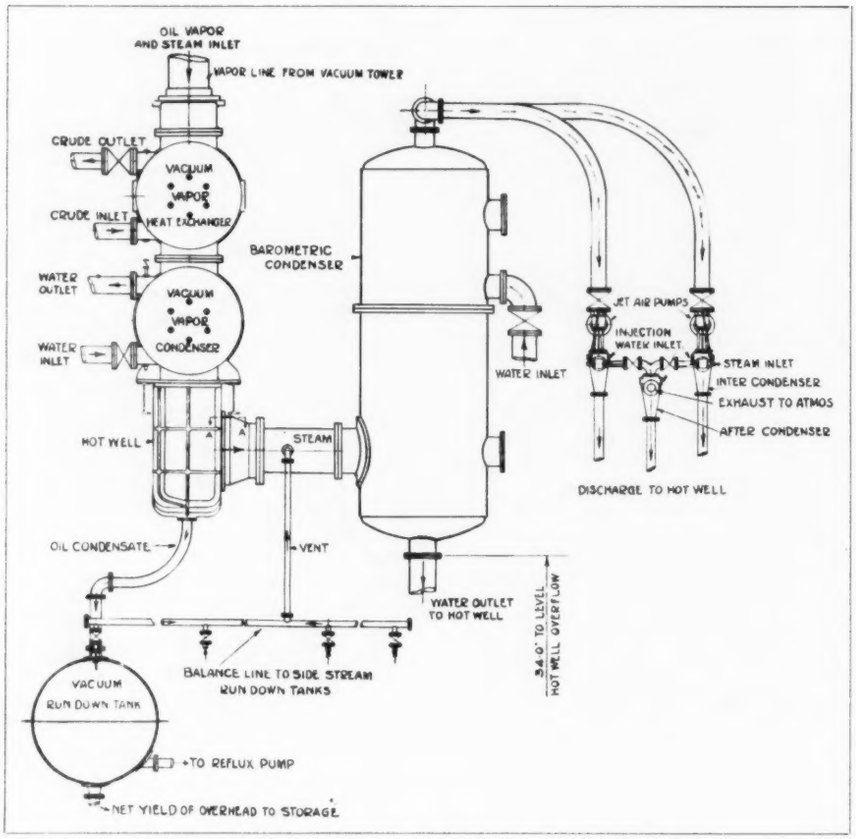


Fig. 6—General assembly of vacuum actuating system

space between the rectangular sections and the wall of the tower is filled in with cast iron or wrought steel pieces of suitable shape, or is used as downcomers.

A notched weir evenly distributes the liquid at the entrance side of the plate and a weir at the exit side retains liquid at a proper depth on the tray. Flowing over this exit weir the liquid drops through the chamber formed by an apron and the wall of the tower into a seal pan and so across the plate below in the opposite direction. The arrangement of trays with downcomers is also illustrated in Fig. 3, although the down-comers as indicated are not the type used, but in the tower they are arranged as described above.

Fig. 5 illustrates a typical arrangement of vapor heat exchanger having long rectangular nozzles for good distribution of vapor over the tubes of the cooling surface, without excessive drop in pressure due to friction or baffles. This is important in atmospheric stills, but even more so in vacuum stills, where it is essential to maintain the absolute pressure at the point of flash as low as possible.

At the bottom a chamber is fitted for separation of oil condensate from non-condensable gas and steam. The oil is withdrawn from the nozzle at the bottom and the non-condensable gases and steam are removed through the side nozzle. This type of condenser is chiefly used in vacuum stills where gas oil is condensed at a temperature above that of the steam and non-condensable gases which pass to the barometric condenser and steam jet vacuum pumps. Fig. 6 illustrates a typical assembly of a vacuum actuating system.

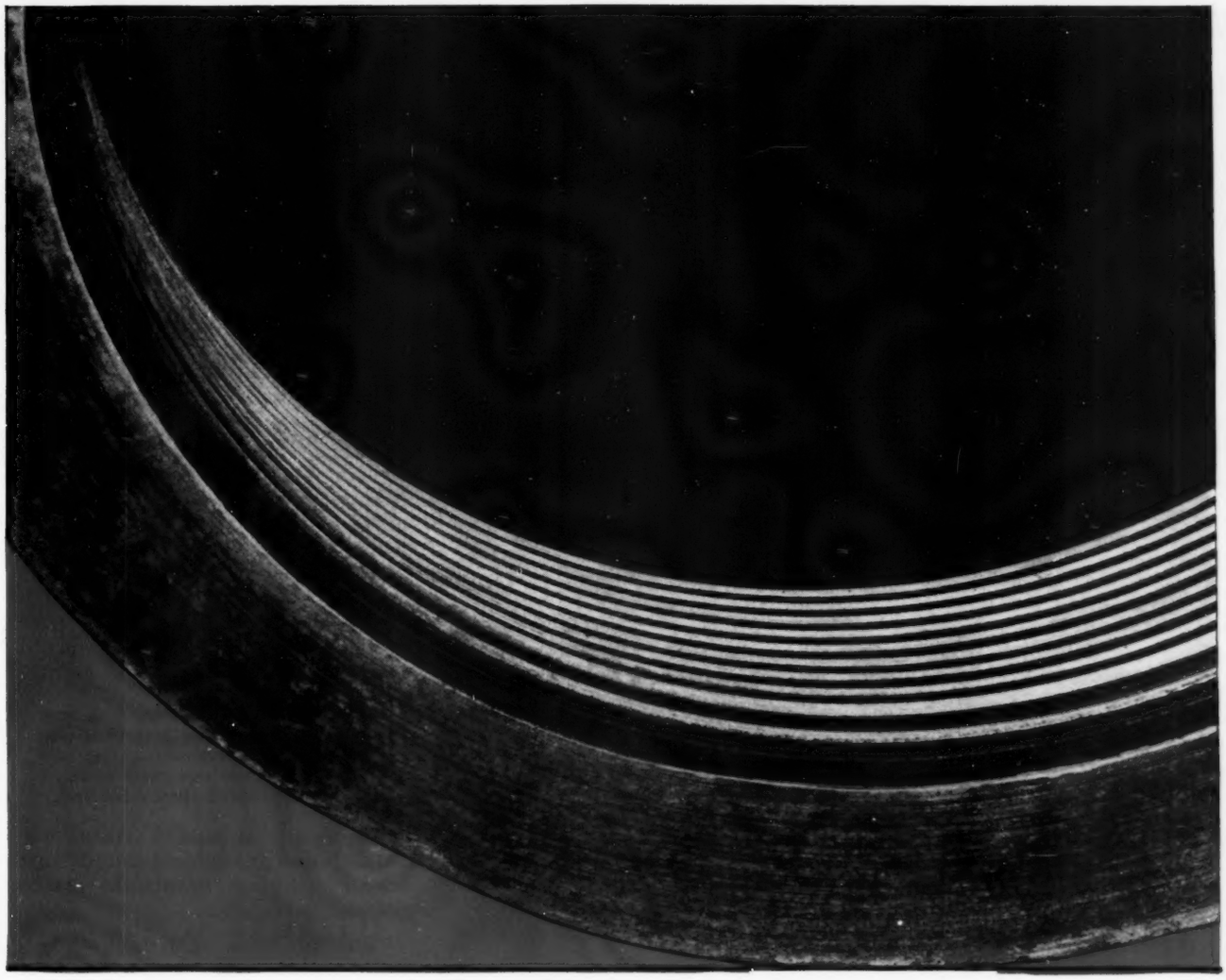
Fig. 7 illustrates diagrammatically a typical arrangement of an atmospheric unit running to heavy flux bottoms, taking cylinder stock overhead as a side stream. This arrangement is typical of a single flash distillation using the lighter vapors to reduce the vapor pressure of the heavier fractions, permitting vaporization of the heavier oils at a lower temperature than would be possible had the lighter vapors been removed.

However, for most Mid-Continent crudes, even when retaining the lighter vapors, the temperature required to recover all of the cylinder stock is still too high to insure good color stability in the gasoline and kerosine, But, by the addi-

Table No. 2

Performance Data on Two-Stage Atmospheric and Vacuum Units with Auxiliary Flash Tower

TEMPERATURE—°F.			
Oil ent. atmos. tube still			361°F.
Oil lvg. atmos. tube still			599°F.
Oil ent. atmos. tower			572°F.
Vapors top of atmos. tower			303°F.
Oil ent. vacuum tube still			528°F.
Oil lvg. vacuum tube still			774°F.
Oil ent. vacuum tower			750°F.
Vapors top of vacuum tower			407°F.
Oil ent. flash tower			687°F.
Vapors lvg. top flash tower			678°F.
Bottoms lvg. flash tower			676°F.
Thruput (2 units)			27130 B/D
Fuel used (by volume)			2.36%
STEAM USED (2 units)			
Total live steam (pumps & jets)			17664 lbs. / hr.
Total exhaust steam used			17166 lbs. / hr.
Water used			5980 G. P. M.
YIELDS			
Total Crude	27130 B/D		100.00%
Gasoline	7724 "		28.47
Kerosine	4024 "		14.83
Gas Oil	2844 "		10.48
Wax Distillate	7263 "		26.77
Heavy Wax Distillate	1403 "		5.17
Cylinder Stock	1862 "		6.86—15J vis.@ 210°F. Fl. O. C.—535°F.
Flux	1870 "		6.89—10.1°A.P. I., 108 M. P.
Loss	140		.53



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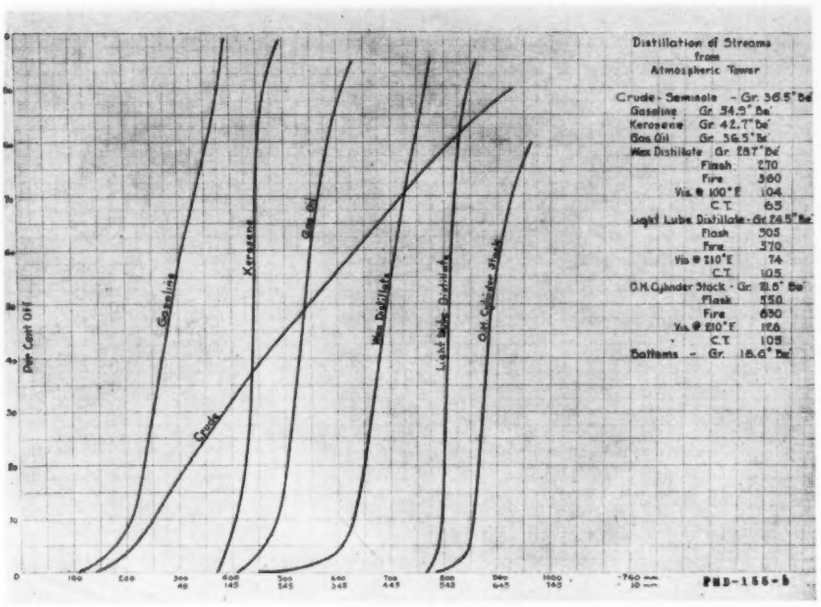

Fig. 9

tion of a chamber into which the bottoms after being withdrawn from the atmospheric tower are flashed under vacuum, a very satisfactory yield of cylinder stock can be obtained at temperatures not harmful to the color of the lighter streams.

The application of this auxiliary flash chamber is illustrated in Fig. 8, although in this cut the auxiliary flash chamber is attached to the vacuum tower but its application to an atmospheric tower is essentially the same.

Fig. 8 illustrates a two-stage atmospheric and vacuum unit in which the maximum yield of cylinder stock overhead can be secured from any type of crude without endangering the color of light overhead products. These are removed in the atmospheric tower at a temperature not exceeding 600° F. The bottoms usually including gas oil are then passed hot to the heater of the vacuum stage and their temperature increased to evaporate the heaviest lubricating stock. For some Mid-Continent crudes 770-778°F. is sufficient. Others, such as Kansas, require temperatures exceeding 800°. Fortunately, such crudes do not break and crack easily under such temperatures.

The flow through such a unit is illustrated on this unit the vacuum tower is supplemented by a flash chamber into which the bottoms from the vacuum tower pass and are flashed under a somewhat lower absolute pressure than can be obtained in the main tower at the point of flash because of the pressure drop necessary to pass the vapors through the bubble trays to obtain good fractionation.

The auxiliary tower is direct connected through a condenser to the jet condenser and steam jets, thus producing a lower absolute pressure at the point of flash than in the main tower. The overhead cylinder stock is condensed and combined with the cylinder stock from the stripping section of the main tower.

(Editor's Note: Fig. 8 is not included due to the fact that the flow chart accompanying the author's paper was not clear enough for photographic reproduction.)

Table 1 presents data obtained on an atmospheric unit when running Seminole crude to flux bottoms.

The addition of a flash chamber increased the yield of cylinder stock from 8.7 per cent to 13.4 per cent, the cylinder stock from the vacuum chamber having a viscosity of 138 seconds at 210° F. The bottoms were reduced to 6.5 per cent. The conclusion drawn from the data presented may well be that to always insure good color of the lighter products, as well as an increased yield of overhead cylinder stock of higher flash, a vacuum flash chamber should be installed as an auxiliary to the main tower.

The curves in Fig. 9 are made

Table No. 1

Performance Data on an Atmospheric Unit

Thruput—Seminole crude	6300 B/D
Gravity	39.7° A. P. I.
Temp. tube still inlet	350°F.
Temp. tube still outlet	800°F.
Temp. superheated steam	750°F.

	Yield %	Gravity ° A. P. I.	Color	E. P. ° F.
Gasoline	39.5	60.0	30+	442
Kerosine	4.4	41.4	17	...
Gas Oil	25.1	36.0	..	...
Wax Distillate	10.3	29.6	..	...
Cylinder stock	8.7	....	Vis. @ 210°F. 98	...
Bottoms	9.8	12.0	..	...
Loss	2.2	....	..	...

Table No. 3

Yields from Two-Stage Atmospheric and Vacuum Unit Without Auxiliary Vacuum Flash Tower

YIELDS			
Total Crude	13518 B/D	100.0%	
Gasoline	3865 "	28.6	
Kerosine	1620 "	12.0	
Gas Oil	1810 "	13.4	
Wax Distillate	3705 "	27.4	
Wax Slop	568 "	4.2	
Cylinder Stock	758 "	5.6	—151 vis. @ 210°F. 525°F. flash
Flux	935 "	6.9	—11.1° Be', 94 M.P.
Loss	257 "	1.9	

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Table No. 4

Performance Data on a Two-Stage Atmospheric and Vacuum Unit When Processing Various Crudes

Test Number	1	2	3
Kind of Crude	Venezuela	Caddo	Okla. City
Gravity of Crude—°A. P. I.	17.7	23.7	38.2
Duration of Test—hrs.	120	16	120
Thruput—B. P. D.	11870	9480	8520
Fuel Used—% thruput	1.64	....	2.31
TEMPERATURES—°F.			
Oil ent. atmos. tube still	330	380	340
Oil lvg. atmos. tube still	615	590	580
Vapors top atmos. tower	252	285	225
Steam ent. atmos. tower	780	725	700
Oil ent. vacuum tube still	570	525	510
Oil lvg. vacuum tube still	650	810	820
Vapors top vacuum tower	...	325	325
Steam ent. vacuum tower	575	725	675
STEAM USED—Lbs. hr.			
Total live steam	9300	...	8830
Exhaust steam atm. tower /G. crude	.06	...	...
Exhaust steam vac. tower per gal. reduced crude	.14	...	...
WATER USED—G. P. M.	2540	...	2540
YIELDS—%			
Naphtha	6.91	1.46	30.14
Refined oil	8.81	5.13	20.75
Gas oil	16.39	29.26	5.16
Light Lube "A"	13.98	....	....
Heavy Lube "B"	3.66	....	....
Motor Oil	....	42.14	....
Paraffine Distillate	....	....	24.80
Cylinder Stock	....	4.07	9.32
Heavy Flux	49.13	18.35	9.08
Gas and loss	1.12	+.41	.75

Successful runs were also made on Lago crude running to 50-60 Pen. Btms.
80-100
100-120
900-1200 Vis. Btms.
470-490 flash Btms.

from distillation of samples of streams recovered from atmospheric distillation of Seminole crude when running to 15.9 per cent bottoms with a tube still temperature of 750° F. At this temperature the color of the gasoline was 30+, and the kerosine 24. At higher temperatures the color of these streams gradually fell off, and at 800° F. tube still temperature the gasoline was 22 color and the kerosine 17 to 18 color.

A four-day run on Seminole Mid-Continent crude through a two-stage atmospheric and vacuum unit, like that illustrated by Fig. 8, using an auxiliary vacuum tower to flash the bottoms from the main vacuum tower is tabulated in Table 2.

The yields for a corresponding run with Seminole crude without the flash tower are tabulated in Table 3.

It is evident from Tables 2 and 3 that to obtain the best color of light products and the maximum yield of cylinder stock a two-stage atmospheric and vacuum unit, supplemented by a vacuum flash tower as an auxiliary to the main vacuum tower, is required. However, the increased yield of cylinder stock is so small that the advisability of the increased investment would depend largely on specific conditions.

Table 4 lists the performance when running various crudes in a two-stage atmospheric and vacuum still similar to that shown in Fig. 8, but without the auxiliary flash tower.

The range of operation shown by Table 4 indicates the flexibility of this construction, which is largely the result of positive control of the heater and tower. The design and arrangement of bubble trays and stripping sections and the weir type of control valves used are largely responsible for close control of fractionation.

It is evident from data submitted that a unit of this type can function economically over a wide range of operations from light topping at one extreme, to running to heavy flux bottoms at the other, requiring only a slight change in adjustment. Such a unit therefore can be considered as a general utility unit, and thus marks a distinct increase in usefulness over the earlier types of tube still and tower which were definitely limited to a specific performance.

New Patents

Prepared by R. E. Burnham, patent and trade-mark attorney, 1343 H Street, N. W., Washington, D. C., from whom copies may be obtained at the rate of 20c each. State number of patent and name of inventor when ordering.

February 3, 1931

REFINING

Tar refining—Jean H. Bregi, Beynes, France. No. 1,791,052.

Method and apparatus for producing gasoline—David G. Brandt, Westfield, N. J., assigned to Doherty Research Co., New York, N. Y. No. 1,791,113.

Process and apparatus for cracking petroleum oils—David G. Brandt, Westfield, N. J., assignor to Doherty Research Co., New York, N. Y. No. 1,791,114.

Art of distillation—Roger D. Hunneman, Chicago, Ill., Francis M. Roberts, Whiting, Ind., and Robert E. Wilson, Chicago, assignors to Standard Oil Co. of Indiana. No. 1,791,209.

Method of and means for treating petroleum oils—Horace H. Setzler and Mert C. McDonald, Coffeyville, Kans., assignors to National Refining Co., Cleveland, Ohio. No. 1,791,329.

Oil reclamation (refining journal-box-lubricating oil)—Leonard D. Grisbaum, Indianapolis, Ind., assignor to Railway Service & Supply Corporation, same place. No. 1,791,473.

Method of and apparatus for reclaiming oils—Leonard D. Grisbaum, Indianapolis, Ind., assignor to Railway Service & Supply Corporation, same place. No. 1,791,474.

Methods of and apparatus for dehydrating and distilling heavy hydrocarbon oils to recover constituents thereof in liquid form—Alexander S. Knowles, Chicago, Ill., assignor to Tar & Petroleum Process Co., same place. No. 1,789,312.

Process of treating sulphur-containing oils—Herbert G. M. Fischer, Westfield, and William J. Addems, Elizabeth, N. J., assignors to Standard Oil Development Co. No. 1,789,335.

Method and apparatus for distillation control—Warren K. Lewis, Newton, Mass., assignor to Standard Oil Development Co. No. 1,789,339.

Method for the separation of paraffin from petroleum oils and apparatus therefor. Jules Verner, Linden, N. J., assignor to Standard Oil Development Co. No. 1,789,347.

MISCELLANEOUS

Metallic protective coating—Stanton U. McGary, Walter F. Rogers, and Stanley Gill, Houston, Tex., assignors to Gulf Production Co. No. 1,790,643.

Outlet-valve for oil-dispensers—Paul B. Renfrew, Fort Wayne, Ind., assignor to S. F. Bowser & Co., same place. No. 1,790,724

Tank-car structure—Louis E. Endsley, Pittsburgh, Pa. No. 1,790,855.

Preparation of mercaptans—Gerald L. Wendt, State College, Pa., assignor to Standard Oil Co. of Indiana. No. 1,791,179.

Liquid-dispensing apparatus — John B. Davis, Springfield, Mass., assignor to Gilbert & Barker Mfg. Co., West Springfield, Mass. No. 1,791,195.

Apparatus for production of gas from gasoline—James T. Jones. Brunswick, Ga. No. 1,791,213.

Liquid-dispensing machine — Charles W. Carey, Wilbur, Ky. No. 1,791,349.

ADVERTISING PAGES REMOVED

New Refining Patents

Refining Lubricants. U. S. P. 1,787,505, Jan. 6, 1931, application filed April 27, 1927; John C. Black and Wirt D. Rial, assignors to Richfield Oil Co. of California.

FOR making Class B lubricants, as defined in government specifications (oils for turbines, dynamos and the like), it has not hitherto been possible to obtain a satisfactory yield from asphalt base crudes such as Californian or Mexican oils. The required characteristic of Class B oils is that they shall not emulsify when shaken with a normal solution of caustic soda. It has been found that oil-soluble products of polymerization, oxidation and sulfonation are retained in lubricants made in the usual way from asphaltic base crudes. These impurities cause the oil to emulsify in soda solution, and also lessen the color stability of such oils in storage.

An effort to overcome these difficulties led to the discovery that a much larger yield of color-stable, non-emulsifying oil is obtained if the impurities are partially removed in the distillation stage, before any considerable oxidation can occur. This can be accomplished by mixing with the oil, during distillation, aqueous caustic potash at such a temperature and pressure that the alkali combines with and extracts from the oil all the oxygen compounds (organic acids, aldehydes, etc.), and also hydrogen sulfide and certain organic sulfur compounds. When this partially purified oil is further treated with sulfuric acid, the efficacy of the treatment and the yield of oil of the desired grade are much improved as compared with previous practice in sulfuric acid purification.

What Is Claimed

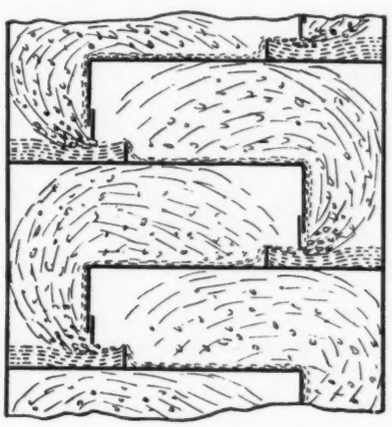
That step in treating lubricants which consists in treating the stock with aqueous caustic potash, agitating with steam under pressure at about 280 degrees F., in quantity sufficient to combine with the emulsifying constituents present, dissolving the emulsifying constituents in the aqueous liquid, and separating the two liquids.

* * *

Fractional Distillation. U. S. P. 1,789,059, Jan. 13, 1931, application filed Jan. 23, 1928; Thomas de Colon Tifft and William Mendius, Assignors to Sinclair Refining Co.

THIS invention provides a fractionating tower which combines the advantages of the open baffle tower and the bubble tower, without their disadvantages. It comprises a vertical shell, having a vapor inlet below and a vapor outlet above, a series of transverse partitions having openings near alternate sides of the shell, liquid-retaining weirs extending across and up from these partitions to retain liquid pools on the side in the direction of vapor travel, and baffles extending across and down from the partitions to serve as vapor weirs.

As indicated in the drawing, this construction provides alternately high and low vapor velocity through the tower, with foaming or bubbling of liquid where vapor velocity is high and separation of entrained liquid from vapor where the velocity is low. Among the favorable results of this alternation are increased tower capacity, fine and accurate separation of desired fractions, susceptibility to immediate control, and adaptability to most variations encountered in normal operation. The improved tower is especially useful for fractionating gasoline, but is also profitably applicable to stripping, refluxing and fractionating petroleum distillates in general.



What Is Claimed

An improved tower comprising a vertical shell having a lower vapor inlet and upper vapor outlet, with transverse imperforate partitions arranged between inlet and outlet, these partitions having openings adjacent alternate sides of the shell, liquid weirs extending across and up from the partitions at a substantial distance from the edges of the partitions adjacent to the openings, to retain liquid pools on the side of the weirs in the direction of vapor travel, and vapor baffles extending across and down from the partitions, spaced from the weirs in the direction of liquid travel.

Purifying Heavy Oils. U. S. P. 1,788,653-4, Jan. 13, 1931, applications filed Nov. 12, 1927; Walter S. Baylis, Assignor to Filtrol Co. of California.

TWO embodiments are specified of the same invention, which comprises use of an adsorbent clay to aid, or to replace partly or entirely, the sulfuric acid purification of oils in making lubricants and other viscous oils.

As applied to oils having some content of tar and asphalt, the improved treatment comprises mixing with the oil an adsorbent, such as acid-treated clay, and subjecting the mixture to steam distillation. For some grades of oil it is advisable to add to the adsorbent a small amount of sulfuric acid; owing to the very large surface assumed by the acid on the finely divided carrier, a relatively enormous effect is obtained and the amount of acid used may be very small. Thus, it becomes unnecessary to give the oil a separate acid treatment. It is an important feature of this embodiment of the improvement that the oil is exposed to the adsorbent during distillation, and that both the liquid and vapor phase are so exposed. This procedure is specified in 1,788,653.

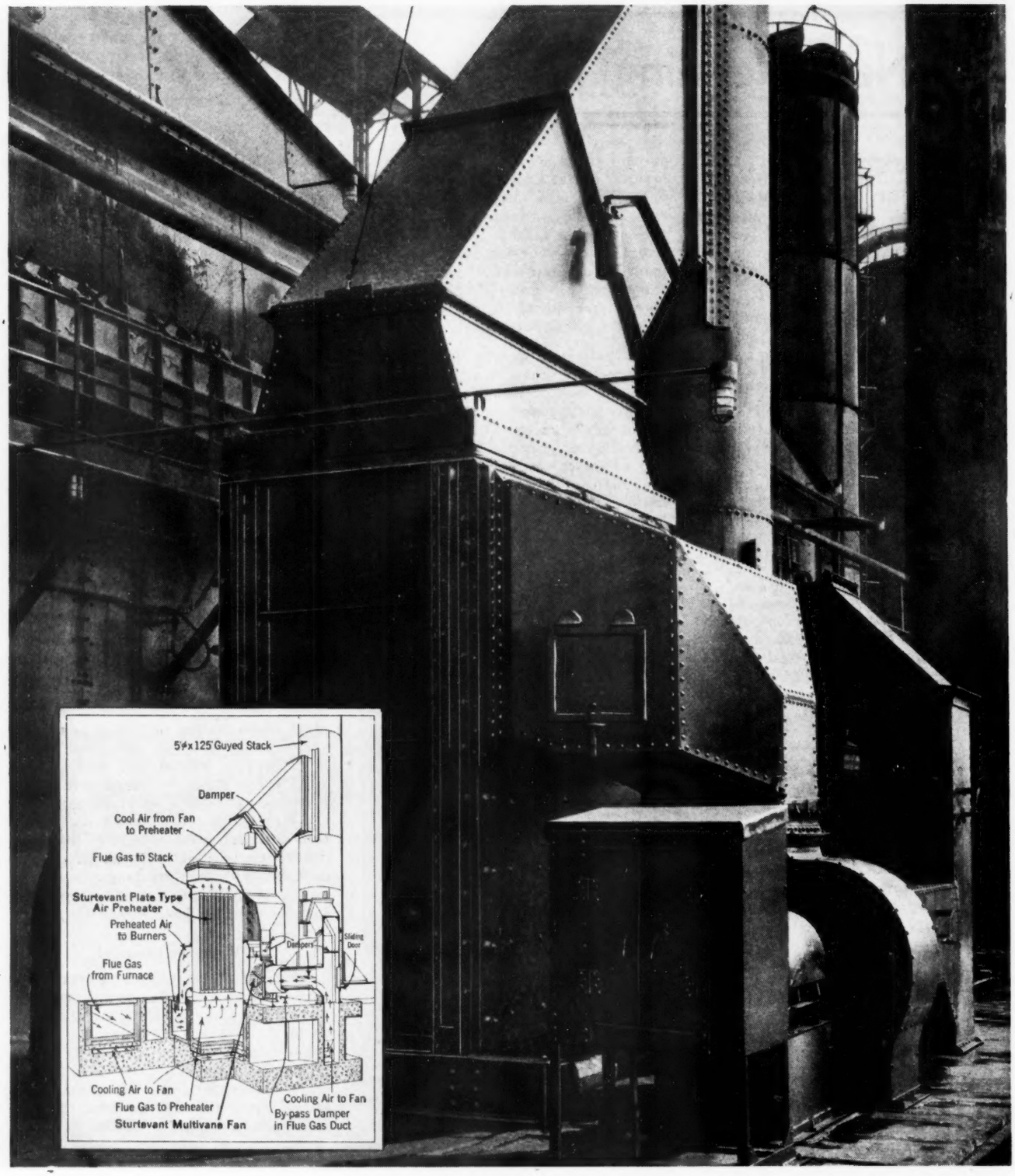
In 1,788,654 the new method is applied to oils not containing tar and asphalt e. g., Pennsylvania (paraffin base) oils. In both cases, the complete fractionation of the oil is carried out in presence of the adsorbent, which is preferably Filtrol (an acid treated clay which does not form sulfates in presence of sulfuric acid), so that both the liquid and vapor phases make contact with the adsorbent. The essential difference is that a batch process is used for asphalt-containing oils, whereas the method can be made continuous for the paraffin base oils.

What Is Claimed

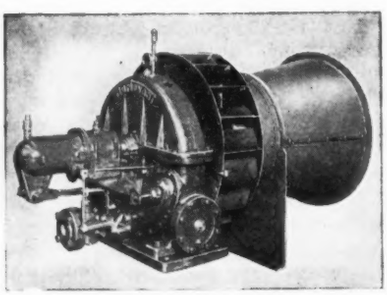
Treating oil by mixing an adsorptive clay therewith, heating to vaporize the lighter fractions, discharging the heated mixture into a fractionating tower, condensing and withdrawing the evolved vapors, withdrawing and cooling the unvaporized residue and clay, and filtering the residue from the clay to obtain a cylinder stock.

CLEVELAND—Paul M. Raigorodsky vice president and general manager of the Petroleum Engineering, Inc., with headquarters in Tulsa, has been in Cleveland conferring with the Arthur G. McKee & Co., on business prospects. Mr. Raigorodsky's company is associated with the McKee company in gasoline plant and refinery construction work.

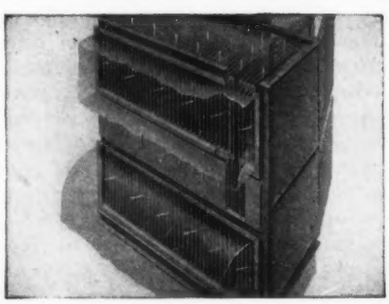
S. R. Wilson, of the London Office of the Universal Oil Products Co., has been in Cleveland visiting officials of the McKee Company.



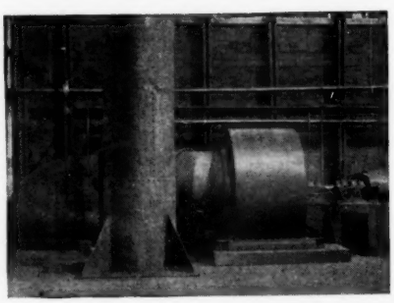
Sturtevant Plate Type Air Preheater used with radiant type furnace



Sturtevant High Pressure Propeller Fan



Sturtevant Air Preheater



Sturtevant High Temperature Recirculating Fan

ADVERTISING PAGES REMOVED

Prairie Begins Rounding Out Company Through Purchase of Two Jobbers

TULSA, Feb. 28

THROUGH purchase of the Long Oil Co. and the Keeton Oil Co., the Prairie Oil & Gas Co. has made an imposing beginning on its long planned entry into the marketing business. These purchases of companies having fair-sized systems of bulk and retail stations, as well as many dealer contracts, are regarded in the trade as forerunner to others, not confined to the state of Kansas.

The accompanying map shows the location of the businesses acquired. With the Long Oil Co., acquired through purchase of stock control, the Prairie got 12 bulk plants and 40 service stations, a compounding plant at Manhattan, Kans., and 30 dealer outlets.

The Keeton Oil Co. system consists of 11 bulk plants, 16 service stations and more than 25 dealer outlets. There was only one point of duplication, and in this case the Keeton company has a bulk plant and the Long company one service station, so there is no duplication of facilities. This is at Niles, Kans.

The Long company is wholly confined to Kansas, while the Keeton company is in business at three points in northeastern Oklahoma. The full list of the properties of the Long company is as follows:

Town	Bulk Plants	Service Stations
Niles	..	1
Solomon	1	2
Abilene	1	2
Chapman	1	1
Manhattan	1	6
Randolph	1	1
Garrison	..	1
Wamego	1	2
St. Marys	1	1
Silver Lake	..	1
Topeka	1	14
Lawrence	1	2
Atchison	1	2
Leavenworth	1	..
Kansas City, Kan.	1	4
	12	40

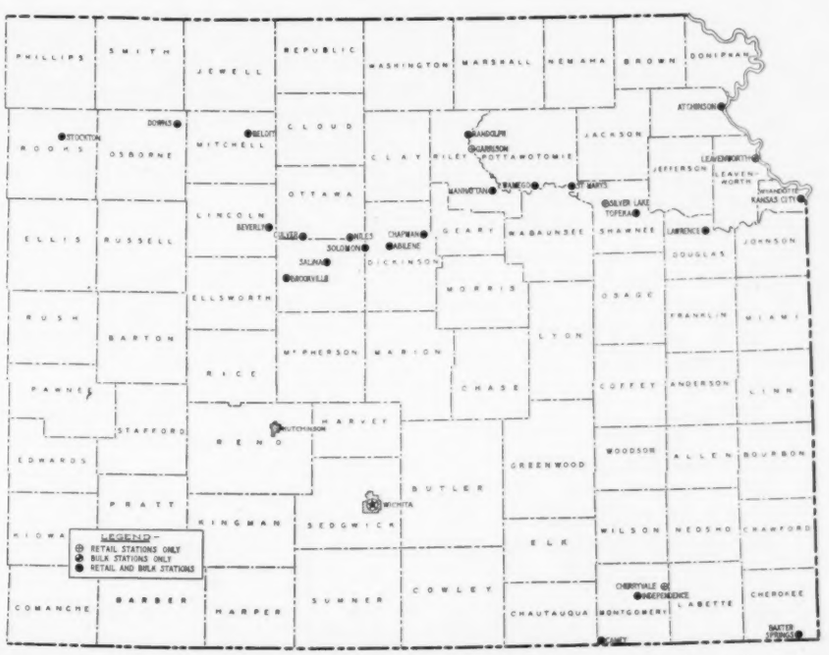
Properties of the Keeton Oil Co. are:

Town	Bulk Plants	Service Stations
Salina	1	1
Beloit	1	2
Downs	1	1
Stockton	1	1
Beverly	1	1
Independence	1	3
Cherryvale	..	1
Caney	1	1
Baxter Springs	1	1
Cardin, Okla.	..	..*
Picher, Okla.	..	1
Miami, Okla.	..	1
Brookville	1	1
Culver	1	1
Niles	1	..
	11	16

Prairie officials say that final details of management have not been settled. The marketing division of the Producers & Refiners Corp., subsidiary of the Prairie, is now in charge of the recently acquired systems. Petroleum products are being supplied from the Sand Springs refinery of the Producers & Refiners.

*Included because company has dealer outlet.

All points are in Kansas except as otherwise noted.



Map of Kansas showing locations of stations recently acquired by the Prairie Oil & Gas Co.

Cash Register for Stations

A new cash machine registering cash and charges sales of gasoline, oil, tires, tubes and other items, and showing the number of gallons of gasoline sold up to 999, quarts of oil sold and the number of the attendant handling the transaction, has been recently developed specially for the service station by Burroughs Adding Machine Co., Detroit.

The machine has a registering capacity of $999.99. It can also receive payments on accounts and issue credits or paid out items.

The full-type keyboard permits the exact registering of amounts and provides a sufficient number of decriptive keys to describe transactions in detail. Another feature is the locked-in detail tape.

Purchasing Agents to Meet

NEW YORK—The annual convention of the National Association of Purchasing Agents will be held at Toronto in the Royal York Hotel, June 8 to 11, according to G. A. Renard, secretary-treasurer.

Canadian Marketers Fight Gasoline Import Tax; Repeal Demanded

By Arch L. Foster

N. P. N. STAFF WRITER

TORONTO, Feb. 27

REFINERS in the United States whose motor fuel gasolines are finding their way into Canada will watch with interest the discussion, and possible action, on the gasoline import tax and dumping duty by the Canadian Parliament at its meeting March 12.

The whole subject of these taxes, and their effect on both the American refiner doing business in Canada and the independent Canadian gasoline distributor and retailer who has been obtaining his material from American refiners, was recently brought into the limelight by a strong protest sent to the government at Ottawa by the association of independent distributors in western Canada.

This follows a similar protest made last fall by an association of eastern Canadian dealers, representatives of which went to Ottawa and urged repeal of the dumping legislation. According to the claims of these bodies this legislation results in a squeezing of the independent dealer to such degree that the larger refiners and marketers are monopolizing the oil marketing business in Canada, tending to force out the independents, who must either buy from the Canadian refiners, or import gasoline from the United States, the tax and dumping duty eliminating their margin of profit they claim.

Previous to the passage of the last gasoline import tax, a levy of 1 cent per imperial gallon had been applied to certain grades and types of gasoline imported into Canada. Last Sept. 16 this tax was raised to 2½ cents per gallon, applicable to all grades of gasoline imported, excepting natural gasoline and certain other products which may be brought in to be blended with Canadian-produced naphtha for sale as gasoline.

Later, anti-dumping regulations passed provided that no gasoline should be imported and sold at a price lower than an arbitrary figure, which was to be based on the average total cost of manufacture in the United States. This law stated that, on gasoline sold to a Canadian importer at a price lower than the minimum provided for, a duty should be added which would increase the price in Canada to a total of 8.7 cents per U. S. gallon, excluding transportation charges. The manner of arriving at this final figure will be explained later. The dumping duty is applied only to gasoline originating in the Pennsylvania area.

THE new association of independent marketers, known as the Independent Petroleum distributors Association of Canada, was formed to combat the new legislation. It is headed by Wade Hampton, independent jobber of Toronto, as president. Stephen Jones is executive secretary and parliamentary representative of the association, with headquarters at 14 Toronto St., Toronto.

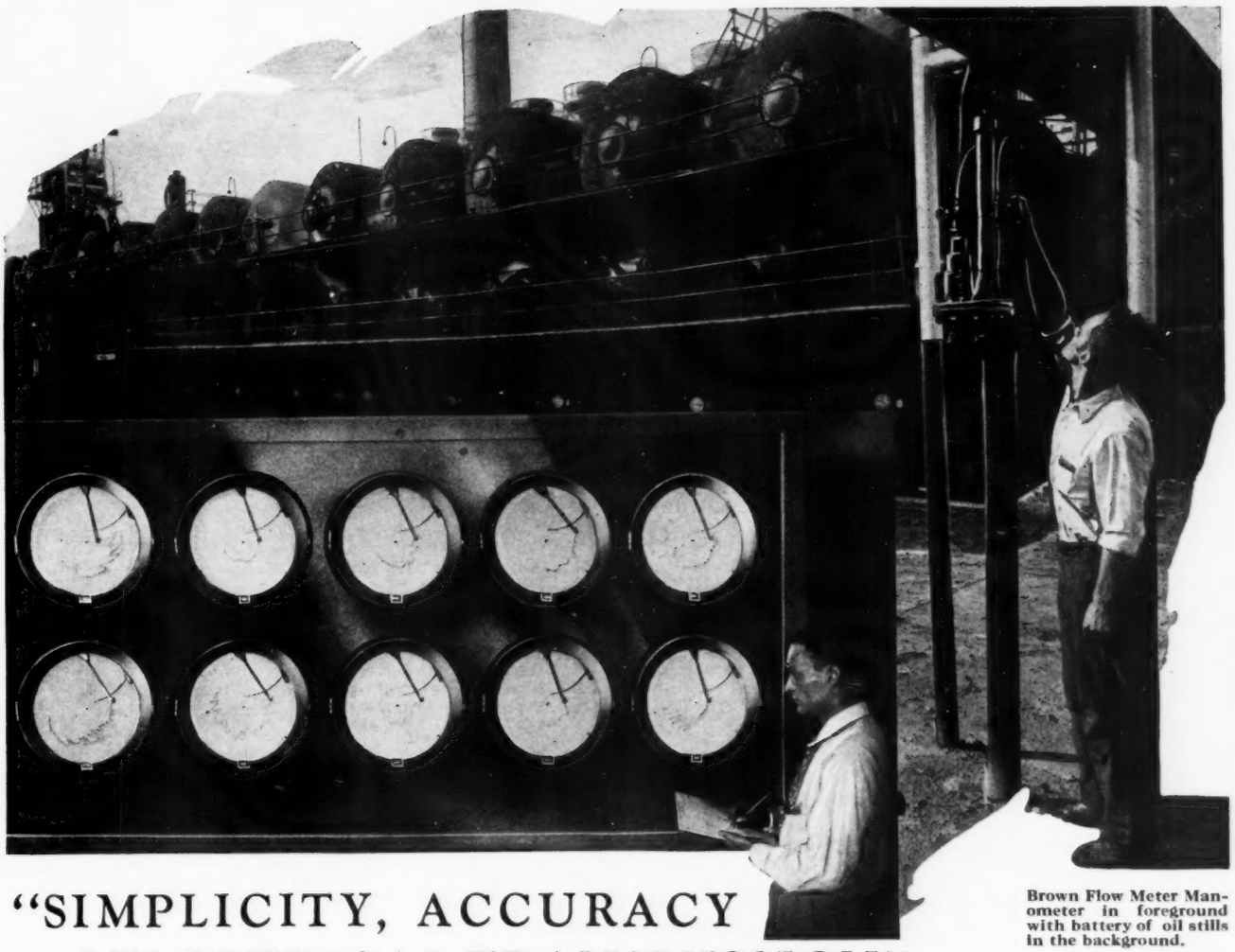
The association has a membership, according to its secretary, of approximately 415, out of a total (estimated) of about 600 independent dealers in the country, and represents an invested capital of $85,000,000 to $90,000,000 in bulk stations, tank trucks, barges, filling stations and other property.

In presenting their petitions to the representatives of the conservative government, the independents protest that the import and anti-dumping duties on U. S. gasoline result in a virtual monopoly of markets by the large refiners in Canada-Imperial Oil, McColl-Frontenac, British-American, and Canadian Oil.

President Hampton, who headed the delegation presenting the petition for the eastern group, proposed to E. B. Ryckman, Canadian Minister of National Revenue, that the government act as referee between the independents and the home refiners in reaching an agreement on prices for gasoline. This agreement would determine the prices to be paid by any purchaser for definite grades of motor fuel, and would fix the grades to be made available to the independent dealers. Minister Ryckman asked for further information, and promised to consider the problem.

The attitude of the government is that the gasoline imported into Canada was being "dumped" here, on account of the overproduction in the United States, with consequent lack of market there, and that this gasoline did not represent the fuel being sold in the U. S. but was a substitute and was sold at prices lower than prevailing in the U. S.

WITH Pennsylvania gasoline priced at 6.8 cents, the difference between this and the minimum import price, plus the 2½ cents tax, resulted in a total extra cost of 4.4 cents per gallon to the Canadian importing oil company. The considerable portion of the gasoline handled in recent years by the Canadian independents was a blend of Pennsylvania gasoline with other motor fuels. More



Brown Flow Meter Manometer in foreground with battery of oil stills in the background.

Brown Recording Electric Flow Meters measuring the steam output and distribution at the El Dorado, Ark., plant of the Lion Oil Refining Company.

"SIMPLICITY, ACCURACY and ELECTRICAL TRANSMISSION"

Mechanical superintendent of oil refinery praises these modern flow meter features

MR. L. G. Dufilho, Mechanical Superintendent for the Lion Oil Refining Company, El Dorado, Ark., praises the simplicity, accuracy and electrical transmission features of the Brown Electric Flow Meter. The above illustration shows ten of these flow meters in service at this plant. In another picture is seen one of the Brown Manometers operating these instruments, while in the background appears a battery of huge oil refining stills. These instruments are used for systematically checking steam distribution throughout the plant, as well as for checking boiler output. Mr. Dufilho significantly adds to the above statement, the following words: "We are well satisfied with the instruments and the courtesy of their representatives." You, too, will find complete satisfaction with this unusual flow meter. Write for information or quotation.

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Brown Electric Flow Meter

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Location and Ownership of Canadian Refineries

	Name	Location of plant
1.	Imperial Oil Refineries Ltd.,	Imperoyal, N. S.
2.	Imperial Oil Refineries Ltd.,	Montreal, P. Q.
3.	McColl-Frontenac Oil Co., Ltd.,	Montreal, P. Q.
4.	The British American Oil Refineries Ltd.,	Toronto, Ont.
5.	Canadian Oil Refineries Ltd.,	Petrolia, Ont.
6.	Imperial Oil Refineries Ltd.,	Sarnia, Ont.
7.	McColl-Frontenac Oil Co., Ltd.,	Toronto, Ont.
8.	North Star Oil Ltd.,	St. Boniface, Man.
9—	Imperial Oil Refineries Ltd.,	Regina, Sask.
10.	Associated Refineries Ltd.,	Wainwright, Alberta
11.	Imperial Oil Refineries Ltd.,	Calgary, Alberta
12.	The Maple Leaf Oil & Refin. Co. Ltd.,	Coutts, Alberta
13.	Regal Oil and Refining Co. Ltd.,	Calgary, Alberta
14.	Imperial Oil Refineries Ltd.,	Ioco, B. C.
15.	Vancouver Oil Co. Ltd.,	Vancouver, B. C.

recent estimates of the refinery price, based on reduced crude prices, has placed the minimum import price at 8.119 cents, under which the law is now operating. The prices were those prevailing early in February.

Independent operators also protest that Canadian refiners, instead of adding the extra cost of the tax to their tank wagon price, in order to permit the independent marketer in Canada a fair margin, reduced their price by one cent at their own stations. This in effect reduced the gross margin of the independents by one cent on top of an extra cost of 4.4 cents in bringing the gasoline into the country. This, the independents say, is discriminatory, and will either force them out of business, or necessitate their purchasing gasoline from the Canadian refiners.

Affidavits were made by officials of 11 of the larger refining companies of Pennsylvania, stating that they had quoted gasoline prices and sold consignments to Canadian purchasers at the identical prices charged American purchasers. These affidavits were presented to government officials, it is understood, but were returned by the latter to association headquarters as not satisfactorily proving their contention that gasoline is not being dumped in Canada.

The larger refiners and marketers of motor fuels in Canada paint a somewhat different picture of the situation with regard to their and the independent marketers' relative positions and the "squeezing" operations of which they are accused. With the retail price of gasoline at 28 cents, as it was before the passage of the tax bill, they claim the spread between the cost of imported gasoline to the retailer (independent) and the selling price varied from 7 to 11 cents, depending on locality and other factors.

To illustrate the various items in the cost of imported gasoline, before as well as after the tax levy and dumping duty were imposed, one prominent oil company official outlined the situation thus; taking 8 cents as a base price for gasoline in the Pennsylvania refinery market and converting this price into the equivalent per imperial gallon, plus a sales tax of about 0.10 cents, a freight charge of 2.38 cents, and the Canadian road tax of 5 cents brings the total cost per imperial gallon to approximately 17 cents. At the retail price of 28 cents this is a margin for the distributor and retailer of 11 cents per gallon.

When the tax of 2½ cents was under consideration, Canadian refiners promised Parliament not to increase the retail price of gasoline in case the tax was passed, as had been done in the case of some other commodities on which protection had been granted. In fact when the 2½-cent duty became effective, tank wagon and retail prices were reduced 1 cent, making the price to the consumer in the Toronto area 27 cents.

Even in this case, it was pointed out, the distributors, jobbers and retail gasoline dealers, buying Pennsylvania gasoline under the base price of 8.714 cents as provided by the dumping duty, still had approximately 7 cents margin to cover distribution and retailing costs in that area, a margin which equals the estimated margin covering tank wagon and retail handling by the larger local refiners and marketers.

The calculation, by the Canadian lawmakers, of the base price which should be paid for Pennsylvania gasoline to be imported into Canada is inter-

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esting. With $2.40 per barrel for crude as the estimated average, the cost of a gallon of gasoline was computed as $\frac{\$2.40}{42}$ or 5,714 cents per gallon, the lawmakers figured. Allowing 3 cents for refining costs made the price f.o.b. Pennsylvania shipping points or refineries 8.714 cents. This is the minimum price at which gasoline may be sold to Canadian distributors and avoid the dumping duty, according to the Canadian law. In the event of quotation or purchase at a lower price, the difference between the paid price and this minimum is added as dumping duty, in addition to the 2½-cent import tax, which must be paid in any event. A later revision of this minimum, on the basis of a $2.15 per barrel crude price, lowered the minimum import price to 8.12 cents per gallon, the present base price.

Senator Gideon Robertson, minister of labor for the present Conservative government, when approached with the petition and contentions of the independent distributors, is credited with making the following statement:

"As the Canadian companies * * * dropped the price (of gasoline) to consumers, I do not see much to worry about from the point of general public interest, though I can see how these independents are squeezed between the dumping duty and the reduction in price by their competitors. The point is, that our advice is that the gasoline affected by the dumping duty is simply a by-product and not the real thing."

Referring to a statement, or figures, in NATIONAL PETROLEUM NEWS of a comparatively recent date which indicate that gasoline costs 16.8 cents per gallon to get to the retail purchaser, from crude, at $1.29 per barrel, a prominent Canadian refiner published in the November 6, 1930, edition of the Toronto Telegram the following estimate for the manufacturing costs for gasoline in Canada, in cents per imperial gallon:

Crude	3.07
Gathering charge	2.40
Refining cost	2.40
Total	7.87
Freight (100 mi. av.,)	1.50
Storage and evaporation	3.50
Tank wagon margin	4.00
Dealer's margin	3.00
Total	12.00
Tax	5.00
Total cost to supply consumer	24.87

These figures are questioned by the independent marketers. Complaint is also made regarding alleged discrimination between different refining localities in, or classified in, the Pennsylvania area. Wellsville, N. Y., a few miles over the state line from Pennsylvania, is included among the refining centers on gasoline from which the dumping duty must be paid. Olean, N. Y., a few miles away, is not included, and gasoline from that point may enter Canada without paying the dumping duty, although the 2½-cent import duty is applicable.

This is a plain case of discrimination without reason, antagonists of the law say. Proponents of the duty state that this is not the case and that gasoline from the latter locality is not produced chiefly from Pennsylvania crude, which is the product the government wishes to exclude, because the shipping point of refineries operating on the crude is nearer the Canadian border than other principal refining territories in this country.

When questioned regarding the building of additional refinery capacity in Canada, local refiners express very decidedly their beliefs that such a procedure will be found unprofitable under present conditions.

"Canada already has a surplus of refining capacity," one official who is thoroughly acquainted with the situation stated. "Any company considering the project of building a new plant here will, of course, investigate the situation well before taking positive action. Such an investigation will show at once that our present capacity is more than ample for our needs for a considerable time to come. Canada will grow, that is certain; but this growth will be quite slow and gradual, and no increase in refining capacity will be needed for some time to come."

From statistical information from government sources the daily refining capacity of Canadian refineries is estimated at approximately 103,000 barrels of crude. Seventeen refineries, of which 15 are in operation, share in this capacity, which equals approximately 37,595,000 barrels per year. In 1929, the last year for which complete figures are now available, Canada produced 37,878,000 Imperial gallons of crude, and imported about 1,035,500,000 imperial gallons, a total of approximately 29,635,000 U. S. barrels.

In 1929, 4,840,000 U. S. barrels of gasoline were imported, in 1930, 4,500,000 barrels. It is obvious that Canadian refineries are not operating at anywhere near their capacity.

It is understood that the Cities Service Co. had obtained an option on a refinery site at Long Branch, near Toronto, and had broken ground for the erection of a refinery there, but that activity has stopped, pending the result of negotiations with the McColl-Frontenac group.

Of the persistent rumors of new plants to be built in Canada by American refiners, and of mergers between Canadian companies and American organizations, which have been frequent for some time, none can be substantiated.

The Shell Co. is building a plant at Burnaby, B. C., near Vancouver. A statement from C. F. Anstie, its manager, has indicated that this plant will be producing in six months or earlier. Other rumors of new plants, or rejuvenation of old plants, one at Coutts, Alta., at Montreal by the British-American company, which has purchased a site and is building a terminal there, another at Edmonton, Alta., by the Atlantic Keystone Petroleum Co. of

Canada, and still another at St. Boniface, near Winnipeg, by Radio Oil Refiners, Ltd., have been received repeatedly, but nothing definite has been found out about any of them.

A movement is under way among the members of the independent association to erect a refinery to refine Mid-Continent crude to supply their requirements, but the idea has not yet crystallized, apparently.

The general belief among Toronto oil men is that probably nothing will be done about new building, or mergers, until after the meeting of Parliament in Ottawa, March 12. The forces against the tariff and dumping duties are being marshaled, and a bitter fight is to be made against the laws.

Statements from western Canada say that the large wheat farmers are planning to put aside tractors for farming purposes and use animal power again, unless the price of fuel can be reduced. This situation in the prairie provinces is aggravated by the tariff wall against Canadian wheat by the United States, and the consequent disastrous drop in wheat prices, which has impoverished the western farmer.

Members of Parliament from the west are reported to be strongly and unanimously against the gasoline tariff and dumping duty.

One-Stop Station Moves 700 Tires In One Day's Sale

By E. L. Barringer

N. P. N. STAFF WRITER

DETROIT

"SEVEN Hundred Tires Sold In One Day. That's What a Full Page In The Detroit News Accomlished." Such was the headline of an advertisement for a Detroit daily newspaper in a business magazine for publishers.

The headline is significant to the oil industry in that a lone one-stop service station purchased a full page of advertising in a metropolitan daily newspaper, and that one day's business sold 700 tires. Several hundred batteries were sold, and gasoline was bought by 3000 customers in eight days of the sale.

There was an inducement, of course, to attract customers. Five pounds of sugar were given with every dollar's worth of regular merchandise purchased. A quart of milk was given for every dollar's worth of tire bought as another special. Other specials were sold with a pound of coffee free. Several items include free lubricants.

"There may be some question of the wisdom of giving away food stuff with these purchases," said Charles Gershenson, one of four brothers operating the station.

"But we are in business to make money, the same as everyone, and as a result of offering these inducements our profits for the month were greater than for any previous October, in spite of the so-called business depression and lack of buying power."

The specials were offered as the station's eleventh birthday sale. Each year a similar sale has been held in the fall. Foodstuff was chosen as the inducement for the 1930 sale as it was believed to have greater drawing power than any other merchandise.

The advertisement for the sale announced that, if customers did not want the foodstuffs themselves they could have it delivered to some worthy person or charity.

The station that made this offer is Ned's Auto Supply Co., eight miles from the business district of Detroit.

Eleven years ago Ned Ger-

Ned's one-stop station in Detroit that sold 700 tires in a day

shenson started the business with a combination grocery and meat market on the corner, with a curb pump in front of his store. Later the groceries were replaced with a small tire repair store.

As the business grew the present station was built. The gasoline and oil departments are in a station building purchased from the Standard Oil Co. of Indiana.

From gasoline and tires the merchandise line sold at the station has expanded to include about everything in the automotive servicing field.

Cabinet models of radios were sold, also but with indifferent success. Then the miniature radio set came along. These were sold over the counter, with no installation or service. In a few months last fall to the station sold 25 of these sets.

Several years after the business was started the father died. Charles, the oldest son, had been educated to be a lawyer. He gave up his practice, and took over the station.

As the three other sons, Aaron, Samuel and William, grew up they were sent through the University of Michigan and then entered the business. Each has his own responsibilities for the business. Charles looks after advertising; Samuel, credits; Aaron, merchandising; and William is the general manager.

This station now employes 28 service men. There are five salesmen soliciting accounts.

The brothers attribute the success of the station to their co-operation and personal supervision. Some of them are always at the station at any given time to look after the work.

On a cold winter morning a customer came in, complaining that he had purchased an expensive anti-freeze that would not need attention through the winter yet his engine had frozen during the night. The employe who approached the customer first was sure that the anti-freeze would do its work. The customer was equally sure that his engine had frozen.

About the time the customer was getting warm in denouncing the anti-freeze one of the brothers stepped up. The employe was directed to test the radiator while the brother asked the customer how much anti-freeze had been purchased. (The sale had been made at another station).

The test of the radiator showed that it was protected to 15 above zero. The brother had consulted the manufacturer's chart, and pointed out to the customer that he had not purchased enough, since below zero temperatures are common in Detroit.

As a result of this personal supervision the customer purchased some more anti-freeze solution, sufficient to protect his car against severest weather. And before he left the station he asked if there was any special care required in warming up the car with this solution. Personal handling of the case had quieted the customer, and resulted also in a sale.

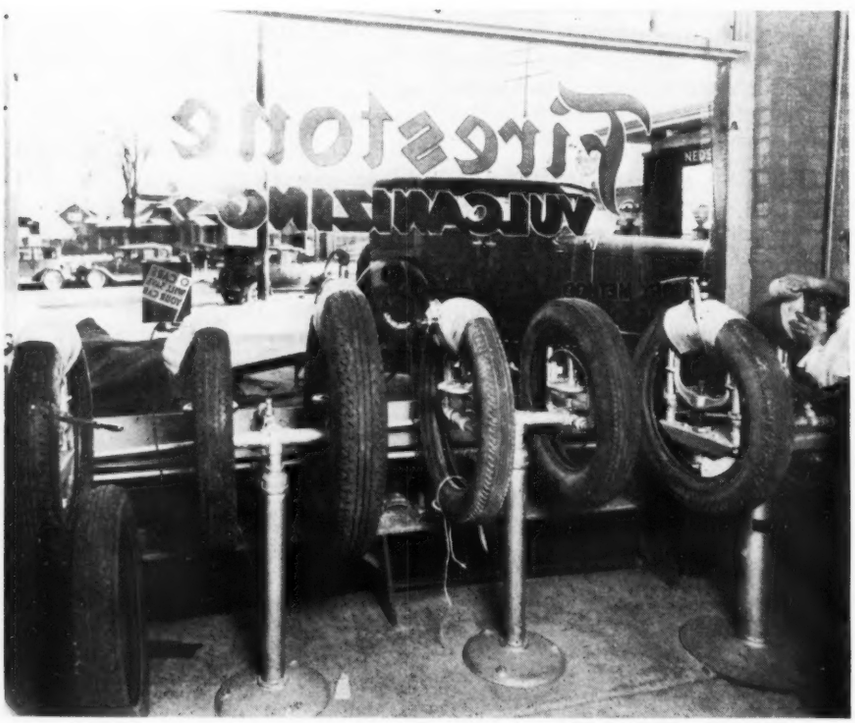
The five pounds of sugar offered at the eleventh anniversary sale in October was given with gasoline and other merchandise, not listed with specials in the advertisement.

The specials on tires and batteries were: a quart of milk with every dollar's worth of tires; a special 4.75 by 19 tire for $5.90 and five pounds of sugar free; a 13-plate battery at $5.75 with a pound of coffee free; and a 15-plate battery and a pound of coffee at $7.50.

Tires were sold at $4.15 to $11.65. This price includes the allowance for old tires. The sizes ranged from 29 by 4.40 to 32 by 6.50.

Accessory item specials with free foodstuff, were internal brake adjusting for $1, pound of coffee; a Simonize special of a can of cleaner, can of polish, polish cloth, for $1, pound of coffee; Duco No. 7 special, one can of liquid polish, one can of luster cream, polish cloth, for $1, one pound of coffee; a $7.50 Arvin manifold heater for $3.50, five pounds of sugar and a pound of coffee; a $6.50 Arvin manifold heater, for $3.25 and 5 pounds of sugar and a pound of coffee; and Model A. Ford heater at $2.25 and a pound of coffee free.

Lubrication specials were: complete greasing with four quarts of oil for $1.50; complete greasing and six quarts of oil for $2; and a complete chassis lubrication with every transmission and differential grease change at 25 cents a pound for grease.



Tire repairing may be an unsightly department but it can be placed in the front window and help with the merchandising. At Ned's one-stop station in Detroit the department is in the window, in front of the outdoor brake testing machines

Opening of the first station in Berlin with the name "Service Station" (early part of 1928)

Service Station Developments In Continental Europe

By M. C. Schreiber, Berlin

A GENERAL survey of the recent developments of service stations on the European continent will interest readers inasmuch as the economic conditions have improved so that a good market exists now for American manufacturers of equipment.

Broadly speaking, one may say that an efficient system of service and filling stations with modern equipment, run on up-to-date lines, has been built up especially in Germany, France, and Switzerland during the last 3 or 4 years, but also in the countries of the former Austrian empire such as Austria, Czecho-Slovakia, Hungary, as well as in the Balkans, Poland, Baltic states, etc., service and filling stations are coming more and more into their own.

Conditions in Germany, being most familiar to the writer, it may be advisable to give first of all a brief survey of the developments in Germany itself.

The majority of German Service stations belong to the big concerns such as Shell, Vacuum Oil, Deutscher Benzol Verband, Olex, etc. The financial resources of these companies have given them, as pioneers of modern service and filling station development, a preeminence of which they are naturally taking full advantage by building more stations every month in order to have as many up-to-date outlets for their products as possible.

The number of modern stations with 3 or more pumps, oil fountains, lubricating and other services is approximatelv 4000 at present. Between 70 and 75% of these stations are owned by the gasoline and oil companies, the remaining stations are privately owned.

It stands to reason that a service station will only pay either in the big cities or at places on important highways with big traffic. Thus you will not be surprised to hear that the first service and filling station was erected in Berlin in September 1927.

It may be of special interest to point out here that it was due in a high degree to the initiative of American manufacturers who have done a considerable amount of "selling the idea" of modern service and filling station equipment and management. This can best be seen from the various illustrations accompanying this article, showing a good many of up-to-date stations of American make. German manufacturers have naturally followed the

Attractive service station with flood-light equipment

same lines, and the service and filling station industry is growing rapidly.

On the other hand the possibilities of the market have also been overestimated by several manufacturers. For the time being, there are about 15 different makes of German carhoists being offered and it is obvious that a number of them will disappear sooner or later. They would not be able to compete with old established manufacturers and highly competitive prices. The average German service station is equipped as follows:

Between two and six pumps for an equal number of gasoline brands, one or two oil fountains, equipment for free water and air supply, one or two car hoists with the necessary lubricating equipment, a brake testing outfit and, of course, a washing plant.

In addition to the actual space and equipment devoted to servicing, most of the modern stations have at least an office room, an adequately furnished waiting—and washing—room and sometimes a showerbath.

Attention to general appearance, too, is being paid and there are a good many decorated stations with gardens, lights and flood-light equipment for night business.

In addition there can be bought spare parts, accessories and personal equipment for the car owner. There are at least show windows or cases for display purposes, if no salesroom is provided for.

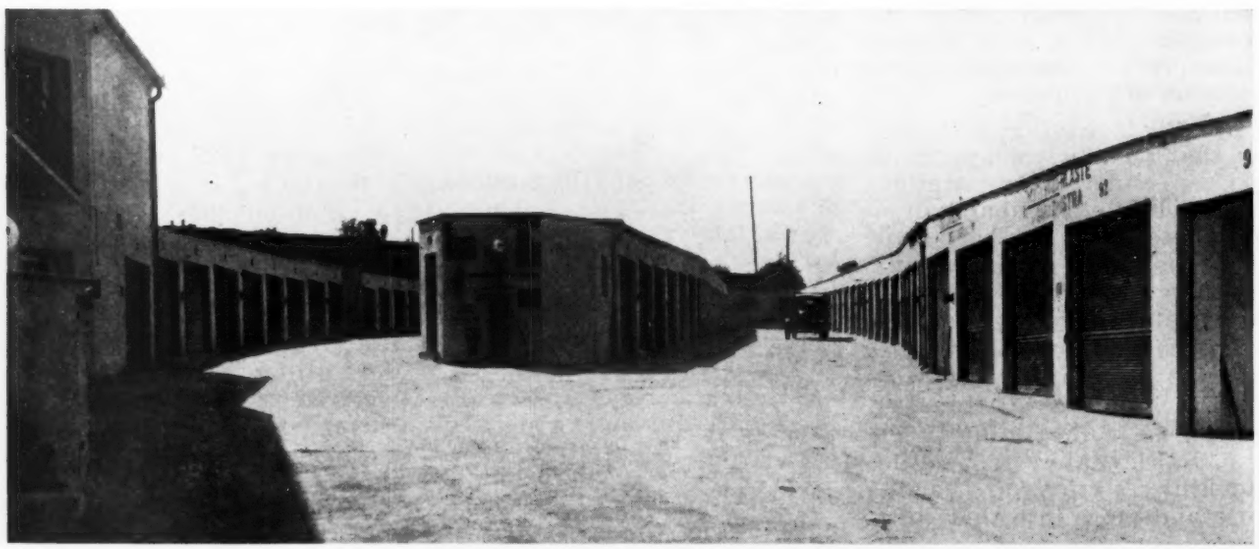
Most of the German service stations have been evolved either from old-fashioned stations or garages and repair shops. They generally continue their old line of business, upon which the new has been grafted. This is particularly true of nearly all privately owned stations that are not specialized on service alone. They usually run garages, repair shops in addition.

They would otherwise find it difficult to compete with the 100 per cent service stations of the big concerns. The latter of course do not handle anything else than fuel and oil and general servicing as outlined above. They confine their business strictly to the service and filling station trade.

Judged by present conditions, it may fairly be presumed that the actual service station business will to a great extent continue to remain in the hands of the big concerns. On the other hand, the future development may largely be influenced by the efforts to introduce a standard brand of fuel for the whole country.

Should this materialize, the gasoline and oil companies would probably be no longer interested in the erection of their own service and filling stations, at least not to the same extent as today.

There have been a great many discussions on the prob-



Usual type of service station with garages

A station with storage garages

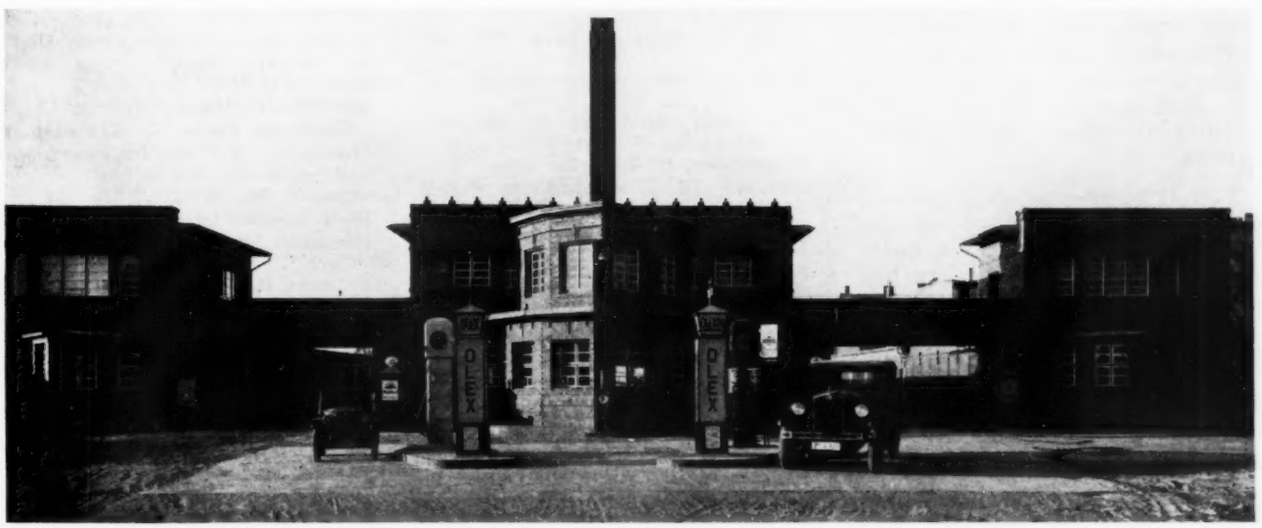
lem of what should be given as free service. At first there was a tendency to give as much free service as possible, but this turned out to be unsatisfactory, as the car owner began to expect too much without an equivalent in the form of buying more. Thus the station owners agreed among themselves in most cities to give only the following free services:

Air and water supply, wiping of the wind-shield, testing pressure of tires, cleaning of headlights, signs, tightening of spare wheels, rim nuts, changing of fuses, tightening of fanbelts, removal of oil stains, and all needed information concerning roads to take, closed sections, hotels, sights, weather conditions, etc.

All other services, such as greasing, washing, battery charging, decarbonizing, valve grinding, tire overhauling, repairing and vulcanizing are offered at moderate charges which vary according to local conditions.

Car washing, for instance, costs 2-4 marks (50 cents to $1), greasing 1.75 marks (44 cents). This will give the reader an idea of the prevailing charges.

The service idea, being something new for the German ga-



A service station with attached garages

rage and filling station trade, the American name of "Service Stations" was first adopted in most instances. Later on it was found that a German expression like "Autodienst" or "Dienst am Auto" and others would appeal better to the German car owners; with the result that there are only a few signs now reading "Autoservice" or "Service Station."

In the early days of this business the centers of big cities were preferred for the erection of stations. It was soon found, however, that a locality at the outskirts of the town was better suited in every way. The reason is obvious: Car owners did not care to stop to fill up where traffic was always at a peak.

There is a 50 per cent oversupply of the actual demand at many places, while others lack modern stations altogether. This is of course due more or less to an absence of co-operation and co-ordination and the leading trade associations, such as "Reichsverband der Garagen-Besitzer" and "Reichsverband der Tankstellen-Besitzer und Verwalter," are at present making every effort to determine the actual demand before erection of new stations and thus to prevent their being placed, where there is no need.

At present there is an oversupply of stations in certain districts, which tends to react unfavorably upon the general trade conditions.

What has thus been said about the origin and development of the service and filling station business in Germany is quite typical of conditions in Switzerland, subject to certain minor variations connected with the different geographic, climatic and inland revenue conditions.

The type of one-stop service stations is as yet rare on the European continent, the automobile traffic being rather small compared with that of the United States. It is hoped, however, that the general condition of the European market will improve sooner or later to such an extent that it will pay to build more stations of this kind.

In connection with this year's international automobile show to be held in November in Berlin, there will be a special section for "the service and filling trade," showing up-to-date equipment as well as models of modern stations. It is hoped that this exhibition will greatly influence the further development of the trade.

Summing up, one may frankly say that the continental development of the service and filling station trade has been a rapid one for the past three or four years and that the entire trade is getting ahead very well.

New Stations Building

Note: Material used in this column is taken principally from newspapers. NATIONAL PETROLEUM NEWS assumes no responsibility for its accuracy. Headquarters of companies and addresses of individuals are given wherever possible.

The list as published from week to week cannot be looked upon as indicative of the relative extent to which stations are being built in various parts of the country.

Service Stations

Redwood Falls, Minn.—A. D. McRae and George A. Barnes.

Bluefield, Va.—Gulf Refining Co., Frick Bldg. Annex, Pittsburgh, Pa.

Cedar Rapids, Ia.—Thomas Sales Corp., 311 Merchants National Bank Bldg., Cedar Rapids, Ia.

Baltimore, Md.—Standard Oil Co. of New Jersey, New York City.

Richmond Hill, N. Y.—Serve-U-Well Co., Brooklyn.

Hartford, Conn.—Nathan Levitsky.

Elmont, N. Y.—William Trinka.

Loraine, Ill.—Farm Bureau Association.

Arlington, Ky.—Standard Oil Co. of Kentucky, Louisville.

Ellsworth, Wis.—Shepard Oil Co., River Falls.

Princeton, Minn.—Walter Nordstrom, Foley.

New Ulm, Minn.—Skelly Oil Co., Plymouth Bldg., Minneapolis.

Hooperston, Ill.—Powlie Bros.

Danville, Ill.—Mid-Continent Petroleum Corp., Cosden Bldg., Tulsa.

Carroll, Ia.—The Texas Co., Chrysler Bldg., New York City.

New Ulm, Minn.—Phillips Petroleum Co., Bartlesville, Okla.

Clayton, Ill.—Flora Oil & Service Co.

Philadelphia, Pa.—Charles Kahn.

Clayton, Ill.—Chaplin Oil Co.

New Ulm, Minn.—Cities Service Oil Co., Commercial Bldg., Tulsa.

New Ulm, Minn.—John Sturm.

Davenport, Ia.—Henry O. Hansen.

Ironwood, Mich.—Supreme Oil Corp., Gentile Bldg., Hurley, Wis.

Sioux City, Ia.—The Texas Co., Chrysler Bldg., New York City.

Darlington, Wis.—Iowa Oil Co.

Elizabethtown, Ky. — Mid-Continent Petroleum Co., Cosden Bldg., Tulsa.

Ann Arbor, Mich.—Shell Petroleum Corp., Shell Bldg., St. Louis.

Sioux Falls, S. D. — The Texas Co., Chrysler Bldg., New York City.

Worthing, S. D.—C. S. Caldwell.

Lake City, Minn.—George Dressen.

Clarinda, Ia.—J. I. Barron.

Moorhead, Minn.—John Larson.

Moline, Ill.—Standard Oil Co. of Indiana, 910 S. Michigan Ave., Chicago.

Waterloo, Ia.—White Eagle Oil Co., Federal Reserve Bank Bldg., Kansas City, Mo.

Red Wing, Minn.—Winona Oil Co.

Mt. Pleasant, Ia.—Henry Schrock & Frank Johnson.

Winthrop, Minn. — Winthrop Co-op. Oil Co.

Baraboo, Wis.—O. F. Philbrick.

Mitchell, S. D.—Ray Meyers.

Quincy, Ill.—J. W. Arnold, 801 North St.

Breckenridge, Tex.—Continental Oil Co., Ponca City, Okla.

Boone, Ia.—Oran Reed.

Waterloo, Ia.—John G. Miller.

Holmen, Wis.—Texaco Oil Co.

Elizabethtown, Ky. — Mid-Continent Petroleum Co., Cosden Bldg., Tulsa.

Winnetka, Ill.—Standard Oil Co. of Ind., 910 S. Michigan Ave., Chicago.

Mendon, O.—Jerry Nichols.

South Bend, Ind.—Goodrich Silvertown, Inc.

Bloomington, Ill.—Charles A. Bates.

Hornell, N. Y.—O. E. Cornish.

Sioux City, Ia.—R. E. Gurney Oil Co., Mitchell, S. D.

Council Bluffs, Ia.—Mona Motor Oil Co.

Council Bluffs, Ia.—Pennsylvania Consumers Oil Co., 1102 S. Main St.

Lewistown, Mont.—E. A. Walstrom, Billings.

Anthon, Ia.—O. S. Wilcox.

St. Paul, Minn.—Standard Oil Co. of Indiana, 910 S. Mchigan Ave., Chicago. Ill.

Woodsfield, O.—R. R. Lucas.

Waverly, O.—Mr. Pearl Armstrong.

Fond du Lac, Wis.—C. R. Burton, Harcum Fuel Co.

Eden, Wis.—J. Pegarra.

Chippewa Falls, Wis.—Crawford Oil Co.

Emory, Tex.—Magnolia Oil Co., Dallas.

Point, Tex.—Magnolia Oil Co., Magnolia Bldg., Dallas, Texas.

Hatton, N. D.—Hatton Co-op Oil Co.

Minneapolis, Minn. — Cities Service Oil Co., 1745 University Ave.

Minneapolis, Minn.—Waverly Corp.

Cochranton, Penn.—T. R. Bolton.

Chauncey, N. Y.—Theodore Stenwerth, Cedar St., Dobbs Ferry, N. Y.

Grinnell, Ia.—Grinnell Oil Co.

Rock Rapids, Ia.—Farmers Oil Co.

Brainard, Minn.—Crow Wing County Farmers Co-op Oil Co.

Chicago, Ill.—The Texas Co., 135 E. 42nd St., New York, N. Y.

Brownsville, Tenn. — Tennessee Oil Co.

Darien, Wis.—Hansen Oil Co., Burlington, Wis.

Bulk Stations

Minneapolis, Minn.—L. L. Coryell Marketing Co., Lincoln, Neb.

Dillsboro, Ind.—Stoll Oil Refining Co., Louisville, Ky.

Allison, Ia.—Butler Co.

Crude Production by Fields

By Telegraph—Daily average gross output, by fields in U. S., for week enaing with dates below as compiled by A. P. I.

PRODUCTION SUMMARY

	March 7	Feb. 28
Production east of Rockies	1,633,200	1,578,000
Increase		55,200
Total production in U. S.	2,156,700	2,100,900
Increase		55,800
Crude oil imports	126,430	164,145
Decrease		37,715
Total new crude supply	2,283,130	2,265,045
Increase		15,085

OKLAHOMA

	March 7	Feb. 28
Allen Dome	12,200	11,950
Asher	700	700
Asher, West	7,600	7,450
Blackwell	2,800	2,800
Bowlegs	10,750	11,750
Braman	1,950	1,950
Bristow-Slick	12,750	12,600
Burbank	13,400	13,800
Carr City	11,650	12,550
Cromwell	4,850	4,800
Cushing	12,550	12,500
Davenport	900	900
Duncan Dist.	7,400	7,400
Earlsboro	15,900	17,550
Earlsboro, E.	14,200	17,650
Earlsboro, So.	6,450	8,050
Fox	1,000	950
Garber	3,900	3,900
Graham	3,000	2,950
Healdton	10,600	10,600
Hewitt	6,050	6,050
Hubbard	1,000	1,000
Konawa	19,300	14,850
Little River	18,500	21,550
Little River, E.	9,550	9,400
Logan Co.	4,050	4,150
Maud	2,100	2,900
Mission	3,550	5,250
Oklahoma City	128,250	65,600
Okmulgee, No.	8,800	4,200
Okmulgee, So.	5,300	4,600
Osage (Outside Burbank)	23,000	23,000
Papoose	2,050	2,050
Pearson	550	550
Sasakwa	3,600	3,700
St. Louis	20,300	20,050
Scholem-Alechem	13,650	13,600
Searight	4,850	5,050
Seminole	12,350	13,750
Seminole, East	1,100	1,350
Thomas	600	600
Tonkawa	5,150	5,150
Wewoka	7,850	10,750
Yale-Jennings	7,150	7,150
Others	38,450	36,450
Total, Okla.	501,650	445,550
Increase		56,100

KANSAS

Augusta-Fox Bush	3,050	3,050
Churchill	3,500	3,550
El Dorado-Towanda	12,900	12,950
Florence-Covert	700	700
Greenwood Co.	16,700	16,750
Oxford	2,300	2,300
Peabody-Elbing	1,700	1,700
Rainbow Bend	1,500	1,450
Russell	3,200	3,200
Sedgwick Co.	20,750	20,700
Voshell	19,650	20,750
Others	26,500	26,000
Total, Kans.	112,450	113,100
Decrease		650

NORTH LOUISIANA

Caddo, light	7,950	8,100
Caddo, heavy	2,800	2,850
Cotton Valley	1,800	1,800
De Soto and Red River	2,750	2,700
Haynesville	5,650	5,600
Holly	600	650
Sarepta		
Homer	3,400	3,350
Carterville	1,600	1,650
Urania	4,600	4,900
Zwolle	8,500	9,700
Others	1,600	1,500
Total, N. La.	41,250	42,800
Decrease		1,550

ARKANSAS

Champagnolle	3,250	4,550
El Dorado	3,800	3,850
Lisbon	800	800
Nevada	1,000	1,000
Smackover, light	4,450	4,400
Smackover, heavy	32,650	33,500
Stephens	850	850
Others	1,150	1,100
Total, Ark.	47,950	50,050
Decrease		2,100

ROCKY MOUNTAIN

Wyoming

Big Muddy	1,950	1,900
Elk Basin	700	650
Grass Creek	2,100	2,200
Labarge	2,000	1,550
Lance Creek	200	200
Lost Soldier	3,950	3,900
Oregon Basin	1,550	1,900
Rock River	2,050	2,050
Salt Creek	26,550	27,000
Others	3,500	3,800
Total, Wyo.	44,550	45,150
Decrease		600

Montana

Cat Creek	1,050	1,100
Pondera	1,600	1,750
Sunburst	4,250	4,500
Others	1,150	1,400
Total, Mont.	8,050	8,750
Decrease		700

Colorado

Florence	400	500
Ft. Collins	1,000	1,050
Moffat (Craig)	1,050	1,050
Others	1,750	1,800
Total, Colo.	4,200	4,400
Decrease		200

New Mexico

Artesia	650	650
Bal. Eddy Co.	200	50
Hobbs High	29,600	31,650
Bal. Lea Co.	5,350	6,100
Hogback	450	450
Rattlesnake	900	800
Table Mesa	100	100
Total, N. M.	37,250	39,800
Decrease		2,550
Total, Rocky Mountain	94,050	98,100
Decrease		4,050

TEXAS (OUTSIDE GULF COAST)

Panhandle District

Carson Co.	3,800	3,750
Gray Co.	39,000	37,850
Hutchinson Co.	9,500	10,500
Wheeler Co.	500	300
Others	250	300
Total, Panhandle Tex.	53,050	52,700
Increase		350

NORTH TEXAS

Archer Co.	12,500	12,450
Burkburnett	7,550	7,550
Electra	8,700	8,750
Iowa Park and K. M. A.	4,300	3,750
Montague-Cooke	6,250	6,200
Wilbarger	10,100	10,150
Young Co., No.	8,300	8,350
Others	1,800	1,500
Total, N. Tex.	59,500	58,700
Increase		800

West Central Texas

Brown Co.	4,100	4,150
Callahan Co.	2,000	2,200
Coleman Co.	1,100	1,000
Eastland-Desdemona	4,000	3,700
Jack Co.	900	900
Palo Pinto Co.	400	400
Shackleford Co.	4,000	4,100
Stephens Co.	4,600	4,850
Throckmorton Co.	500	500
Young Co., So.	2,400	2,400
Others	1,200	1,000
Total, W. Cent. Tex.	25,200	25,200

West Texas

Crane and Upton Counties	23,850	24,500
Crockett Co.	1,800	1,800
Ector Co.	5,700	6,150
Howard Co.	21,700	25,450
Jones Co.	1,200	1,200
Mitchell and Scurry Co.'s.	1,800	1,850
Reagan Co.	28,050	29,400
Winkler Co.	48,300	50,700
Yates	90,450	92,300
Bal. Pecos Co.	2,600	3,400
Others	7,300	6,800
Total, West Texas	232,750	243,550
Decrease		10,800

East Central Texas

Boggy Creek	2,400	2,550
Corsicana-Powell	4,800	4,800
Currie	300	300
Mexia	3,800	3,800
Nigger Creek	150	150
Richland	100	100
Rusk and Gregg Cos.	56,050	33,900
Van Zandt	32,450	30,300
Wortham	600	600
Others	50	50
Total, E. Cen. Texas	100,700	76,550
Increase		24,150

Southwest Texas

Chapman Abbot	5,300	5,700
Dale	250	250
Darst Creek	28,200	29,050
Laredo Dist.	13,700	13,400
Luling	9,600	9,600
Lytton Springs	700	700
Salt Flat	15,500	16,100
Somerset	1,300	1,300
Others	500	500
Total. S. W. Texas	75,050	76,600
Decrease		1,550

	March 7	Feb. 28
Total, Texas (Outside Gulf Coast)	546,250	533,300
Increase		12,950

GULF COAST

Coastal Texas

Barbers Hill	20,700	21,450
Batson	1,000	1,000
Big Creek	2,700	2,750
Blue Ridge	1,250	1,300
Boling	700	650
Damon Mound	650	600
Esperson	2,500	2,400
Fannett	600	600
Goose Creek	4,300	4,500
Hankamar	2,300	2,450
Hull	6,200	6,350
Humble	9,300	9,400
Moss Bluff	200	350
No. Dayton	600	400
Orange Co.	1,900	1,950
Orchard	1,900	2,000
Pettus	6,590	7,000
Pierce Junct.	8,800	9,100
Port Neches	1,500	1,500
Raccoon Bend	9,250	9,200
Refugio Co.	33,100	33,550
Saratoga	1,100	1,000
Somerville	2,200	1,850
Sour Lake	2,050	2,000
So. Liberty	2,450	2,500
Spindletop	11,700	12,400
Sugarland	11,900	12,200
West Columbia	4,250	4,250
Others	2,000	2,000
Total, Coastal Texas	154,050	156,700
Decrease		2,650

Coastal Louisiana

Edgerly	750	850
Evangeline	650	650
Hackberry, E.	2,450	2,400
Hackberry, Old	800	800
Lake Barre	2,750	2,850
Lockport	4,750	5,000
Port Barre	1,650	1,800
Sulphur Dome	1,750	1,800
Vinton	6,500	5,850
White Castle	1,000	900
Others	3,500	3,650
Total, Coastal Louisiana	26,550	26,550
Total, Gulf Coast	180,600	183,250
Decrease		2,650

CALIFORNIA

Dominguez	11,400	11,200
Elwood-Goleta	33,500	30,500
Huntington Beach	21,800	20,500
Inglewood	15,600	15,400
Kettleman Hills	26,600	26,700
Long Beach	91,000	92,100
Midway-Sunset	52,300	52,300
Playa del Rey	28,900	30,900
Santa Fe Spgs.	71,000	72,300
Seal Beach	16,100	15,600
Ventura Ave.	45,000	44,000
Others	110,300	110,800
Total, Calif.	523,500	522,300
Increase		1,200

EASTERN

(Not including Mich.)	100,000	103,300
Decrease		3,300

MICHIGAN

Mt. Pleasant	6,900	7,050
Muskegon	1,900	1,900
Saginaw	200	200
Total, Mich.	9,000	9,150
Decrease		150

Compilation Of Mid-Continent Refinery Operations

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Mid-Continent Refinery Operations, Week Ended March 6 (By Telegraph)

	Kansas	Oklahoma	North & Cent. Texas	West Texas	North La.-Ark.	Total Week Ended March 6
Plants Reporting	12	29	25	15	12	93
Da. Av. Cap. (Bbls.)	94,000	161,700	106,100	82,000	77,000	520,800
Da. Cracking Capacity	30,700	52,600	17,200	5,000	22,700	128,200
Da. Av. Crude Runs	47,348 — 15.6	88,572 — 30.3	55,137 — 10.0	22,906 — 30.6	38,825 — 4.4	252,788 — 10.5
Da. Av. Other Oil	5,018 — 14.0	2,114 — 38.9	1,815 — 55.7	576 — 25.7	16,741 + 3.4	26,264 —130.5
GASOLINE—Gallons						
Stocks, Feb. 27	29,297,000	47,130,000	37,726,000	14,240,000	7,273,000	135,666,000
Prod. 2-27 to 3-6	9,963,000 — 10.4	12,353,000 — 21.2	7,861,000 — 22.1	2,134,000 — 31.3	5,524,000 + 9.0	37,835,000 —16.0
Ship. 2-27 to 3-6	11,166,000 + 5.6	15,586,000 + 12.3	8,303,000 — 6.4	2,862,000 — 14.0	5,394,000 + 12.0	43,311,000 + 4.4
Stocks, March 6	28,094,000 — 4.1	43,897,000 — 6.9	37,284,000 — 1.2	13,512,000 — 5.1	7,403,000 + 1.8	130,190,000 — 4.0
Ratio Sales to Prod.	112.1%	126.2%	105.6%	134.1%	97.6%	114.5%
KEROSINE—Gallons						
Stocks, Feb. 27	9,578,000	15,385,000	2,482,000	23,000	475,000	27,943,000
Prod. 2-27 to 3-6	1,616,000 — 18.1	2,032,000 — 6.3	1,087,000 — 16.6	....	274,000 — 5.5	5,009,000 — 13.1
Ship. 2-27 to 3-6	2,046,000 + 30.2	1,915,000 + 20.7	1,229,000 — 12.9	14,000 — 56.2	310,000 + 8.4	5,514,000 +120.8
Stocks, March 6	9,148,000 — 4.5	15,502,000 + 0.8	2,340,000 — 5.7	9,000 — 60.9	439,000 — 7.6	27,438,000 — 1.8
Ratio Sales to Prod.	126.6%	94.2%	113.1%	.....	113.1%	110.1%
STOVE DISTILLATE—Gallons						
Stocks, Feb. 27	3,504,000	4,893,000	915,000	118,000	24,000	9,454,000
Prod. 2-27 to 3-6	500,000 — 26.4	726,000 — 28.5	268,000 — 35.7	32,000 — 3.0	21,000 — 66.7	1,547,000 — 29.9
Ship. 2-27 to 3-6	603,000 + 10.3	803,000 — 23.7	427,000 + 14.2	41,000	28,000 — 28.2	1,902,000 — 7.7
Stocks, March 6	3,401,000 — 2.9	4,816,000 — 1.6	756,000 — 17.4	109,000 — 7.6	17,000 — 29.2	9,099,000 — 3.8
Ratio Sales to Prod.	120.6%	110.6%	159.3%	128.1%	133.3%	122.9%
GAS OIL—Gallons						
Stocks, Feb. 27	3,067,000	28,730,000	2,287,000	4,793,000	5,953,000	44,830,000
Prod. 2-27 to 3-6	521,000 — 29.4	1,881,000 + 45.3	1,054,000 +512.8	582,000 — 16.1	2,141,000 + 6.1	6,179,000 + 25.7
Ship. 2-27 to 3-6	552,000 — 26.0	2,672,000 +188.9	944,000 +256.2	475,000 — 58.3	2,955,000 + 23.7	7,598,000 + 39.1
Stocks, March 6	3,036,000 — 1.0	27,939,000 — 20.8	2,397,000 + 4.8	4,900,000 + 2.2	5,139,000 — 13.7	43,411,000 — 3.2
Ratio Sales to Prod.	105.9%	142.1%	89.6%	81.6%	138.0%	123.0%
FUEL OIL—Gallons						
Stocks, Feb. 27	8,840,000	51,682,000	63,944,000	15,040,000	23,433,000	162,939,000
Prod. 2-27 to 3-6	3,685,000 — 11.7	4,261,000 — 16.1	5,974,000 — 18.1	2,800,000 — 28.8	4,969,000 — 5.9	21,689,000 —15.8
Ship. 2-27 to 3-6	4,156,000 + 17.3	5,465,000 + 29.7	7,091,000 — 4.9	4,652,000 + 23.8	5,553,000 + 81.1	26,917,000 +22.2
Stocks, March 6	8,369,000 — 5.3	50,478,000 — 2.3	62,827,000 — 1.7	13,188,000 — 12.3	22,849,000 — 2.5	157,711,000 — 3.2
Ratio Sales to Prod.	112.8%	128.3%	118.7%	166.1%	111.8%	124.1%

Gasoline Produced by Various Methods, Week Ended March 6

	Kansas	% of Total	Oklahoma	% of Total	North & Cent. Texas	% of Total	West Texas	% of Total	Louisiana-Arkansas	% of Total	Total	% of Total
Straight Run	5 108 000	51.3	8 599,000	69.6	4,857,000	61.8	1,972,000	92.4	1,773,000	32.1	22,309,000	59.0
Cracked	3 759 000	37.7	2,654,000	21.5	1,417,000	18.1	55,000	2.6	2,863,000	51.8	10,748,000	28.4
Natural	1 096 000	11.0	1,100,000	8.9	1,587,000	20.1	107,000	5.0	888,000	16.1	4,778,000	12.6
Total	9 963 000		12,353,000		7,861,000		2,134,000		5,524,000		37,835,000	

\+ or — columns are % change over previous week.

Mid-Continent Refiners Cut Crude Runs 30,000 Barrels

Staff Special—By Telegraph

TULSA, March 10

A TEN per cent reduction in crude runs at Mid-Continent refineries reporting weekly operations to NATIONAL PETROLEUM NEWS was registered the first week of March. Runs were reduced 29,700 barrels daily average, with all districts sharing in the curtailment.

At the same time other oil charges were reduced 13.5 per cent.

Gasoline output accordingly decreased 7,200,000 gallons, with the Arkansas-Louisiana district the only one to report an increase.

Gasoline shipments increased 1,800,000 gallons. Increases were made in Kansas, Oklahoma and Louisiana-Arkansas districts.

A drastic curtailment in output and an increase in shipments caused gasoline stocks to be reduced 5,400,000 gallons. Louisiana-Arkansas district was only one to add to inventory.

Crude runs in the same period a year

Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended March 6. Change in stocks figures from Feb. 6.

GASOLINE

	Gallons
Production	171,369,000
Shipments	165,924,000
Net change in stocks	+5,445,000
Ratio sales to production	96.8%

KEROSINE

	Gallons
Production	22,360,000
Shipments	21,472,000
Net change in stocks	+888,000
Ratio sales to production	96.0%

STOVE DISTILLATE

	Gallons
Production	7,337,000
Shipments	7,193,000
Net change in stocks	+144,000
Ratio sales to production	98.0%

GAS OIL

	Gallons
Production	21,631,000
Shipments	24,618,000
Net change in stocks	—2,987,000
Ratio sales to production	113.8%

FUEL OIL

	Gallons
Production	98,651,000
Shipments	102,363,000
Net change in stocks	—3,712,000
Ratio sales to production	103.8%

ago were 326,000 barrels daily average, as compared with last week's average of 252,788 barrels, and gasoline stocks a year ago were 28,500,000 gallons higher than they were March 6.

Kerosine stocks were reduced 500,000 gallons, with production off 13 per cent and shipments 12.8 per cent higher. Stove distillate production dropped 29.9 per cent and stocks were reduced 3.8 per cent. Gas and fuel oil stocks were reduced 3.2 per cent each.

Narrow Operating Temperature Range

(*Continued from page 32H*)

solution of this problem when and if it arises in the future.

In this talk we have not paid much attention to such tests as gravity, flash, fire, color, emulsion, oxidation, etc. Unless these tests are related to performance in service, their principal use is for purposes of identification or for controlling refining operations. By the use of S. A. E. Viscosity Numbers, a car owner can request, and the filling station attendant can furnish, oil of the proper viscosity and consistency.

The quality of the lubricant, so far as other factors are concerned, depends upon the integrity and ability of the oil company supplying the lubricant. From the standpoint of the automobile industry, we believe that if the car owner can obtain lubricants of the proper consistencies at the different temperatures for the different uses, we can depend upon the oil industry to maintain the necessary quality to keep trying to make the desired improvements.

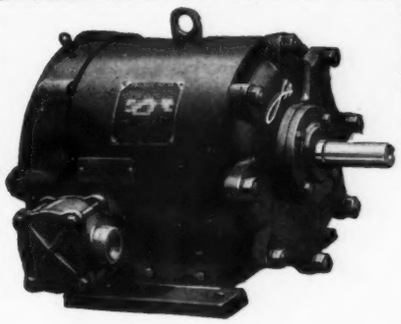
I.O.M.A. Meets March 23

CHICAGO—Annual business meeting and election of officers of Independent Oil Men of America will be held March 23 and 24 at Chicago, according to the Feb. 3 bulletin of the association.

The retiring directors are: E. H. Hilpp, Kentucky Consumers Oil Co., Louisville; W. O. Hudson, Marine Oil Co., Ltd., New Orleans; W. R. McCain, Purity Oil Co., Springfield, Mo.; J. H. Porteous, Valley Oil Co., Middletown, Conn.; B. G. Shepard, Inter-State Oil Co., Kansas City, Kans.; J. Shlifer, Intercity Oil Co., Philadelphia; and J. H. Whitaker, Omar Refining Co., Tulsa.

Railroad to Use Crude for Fuel

WASHINGTON.—An oil company of Calgary, Alta., has arranged with the Canadian Pacific railroad for supplying 400 barrels of crude oil daily for fuel from its producing wells. The oil will be transported from the field by a 14-inch pipeline to McLaughlin and shipped from there to Calgary to be used on locomotives for mountain runs.



The First *Type E Originated in 1927 by The Louis Allis Co.*
"Explosion-Proof" Fan-Cooled Motor

The First *Type E Originated in 1930 by The Louis Allis Co.*
"Explosion-Proof" Air-Break Starter

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- **Developed by Louis Allis engineers, these *companion pioneers* have brought safe individual motor drive to many hazardous industries. They have eliminated the need of fire walls, and the hazard and inconvenience associated with oil-immersed switches.**
- **Tested and approved by Underwriters' Laboratories for Class I. Group D hazardous locations, these companion pioneers are inexpensive, simple, safe and easy to install wherever gasoline, naphtha, alcohol, benzol, and equally hazardous liquids are made, used, or handled . . . widely used in gasoline bulk stations, terminals, refineries, natural gasoline plants, pipe line pumping stations, dry cleaning and chemical plants.**

Write for complete information.

WARNING: Do not confuse Louis Allis "Explosion-Proof" motors and starters with non-approved so-called "vapor-proof" apparatus. Real "Explosion-Proof" motors and starters must pass severe explosion tests to be approved by Underwriters' Laboratories for use in Class I. explosive atmospheres.

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The Saving in LEAKS PAYS *for these*

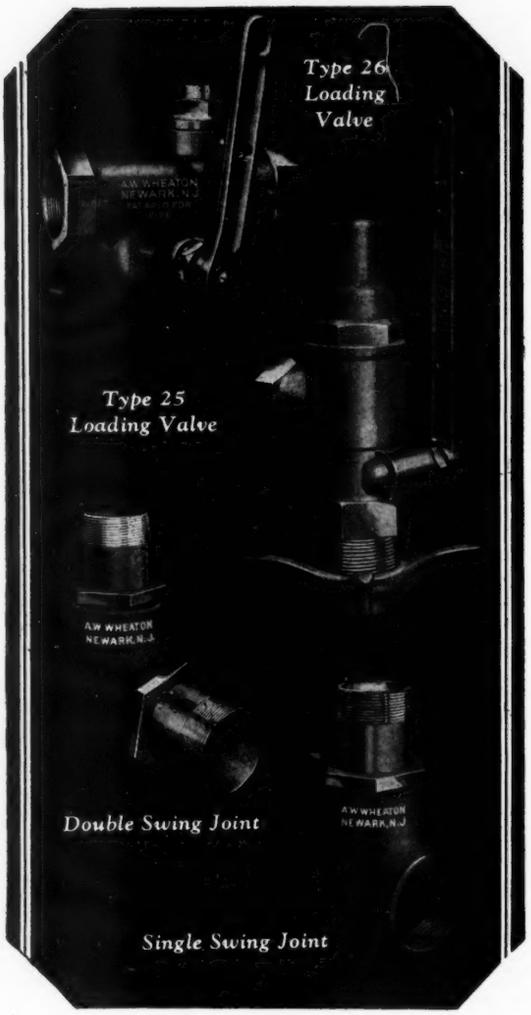
SOFT-CLOSING *Wheaton Loading Valves*

You want a loading valve that is *soft-closing* and *self-closing*—a loading valve that prevents costly leaks, overflows and fires. And that is what these two *Wheaton* Loading Valves *do!*

They are *counterbalanced,* and that assures a *slow, soft, gentle* closing action—prevents vibrations and shocks—lengthens the life of the *pipe line* and the life of the *valve* itself.

They are *self-closing*—the instant the handle is released the valve *shuts tight.* There is no danger of overflows—no loss of gasoline—no matter *how careless* the operator.

These two Wheaton Loading Valves—Type 25 for the *effluent* end, Type 26 for *mid-line*—are saving gasoline and *money* wherever they are used. Their first cost is practically their *only* cost, and that is *returned*—returned *many times over*—with day-in-and-day-out *saving* and *safety*



EASY-SWINGING *Wheaton Swing Joints*

Wheaton Swing Joints function with such ease and smoothness that *strains* are practically eliminated—*leaks* are reduced to a *minimum.* And they *continue* to swing smoothly, *continue* to reduce strains and leaks, *continue* to *save money*—long after ordinary swing joints have gone into the junk heap. Unequalled in *fit* and *finish,* Wheaton Swing Joints are ALL BRONZE—*tough, tempered, long-lasting* bronze, which *neither crystallizes nor corrodes.*

—*and in addition*

ALL-BRONZE Wheaton Fittings are the *longest lasting*

[Send for samples of Wheaton Loading Valves and Swing Joints. Give them a 30 or 60 days' trial. Make them *prove* their superiority—their *saving.* If you are not entirely satisfied, you may return them for credit or refund.]

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Refinery - Tank Wagon Markets

Lower Crude and T.W. Prices Cause General Recessions in Refinery Prices

CLEVELAND, March 9

PRICE reductions occurred in rapid fire succession in some of the country's most important oil markets the first week in March.

Mid-Continent crude oil prices were slashed 22 to 40 cents per barrel by the largest purchaser in that area. Tank wagon and service station prices for gasoline and kerosine were reduced 2 cents generally throughout the middle west. Refinery prices for light oils dropped 0.125 to 0.5-cent a gallon and heavy oils were off from 5 to 10 cents per barrel.

Falling prices spread to both the east and west coasts. Standard Oil Co. of California reduced tank wagon and service station prices of gasoline 4 to 6 cents through California, Oregon and Washington. Union Oil Co. announced that effective March 10 it would reduce its posted prices for crude in the various fields where it buys in amounts ranging from 5 to 80 cents per barrel.

Tank car prices were the only ones to suffer in the Atlantic seaboard markets, tank wagon and service station prices remaining fairly steady. Tank car prices for gasoline, dropping 0.5-cent a gallon generally, lost about half of the ground they had gained since the first of the year.

Bright spots in the week's activities were two 1-cent advances in tank wagon and service prices of gasoline and kerosine by Standard Oil Co. of Ohio and a rising market for neutral oils and bright stock in Pennsylvania.

Light oil prices were lower in the cargo market at the Gulf but remained steady on the west coast. Several distress cargoes of U. S. Motor gasoline were offered at 0.125-cent under recent quotations at the Gulf and this caused a general downward revision in cargo prices for gasolines. The offer of two cargoes of Roumanian gasoline at 5.50 cents laid down New York harbor also was said to have softened the Gulf market.

Trading was light in volume in all except wax markets. Foreign buyers purchased several large lots of white crude scale and inquiries for additional quantities totaling a large volume were in the market. The inquiry entered by the Spanish Monopoly a week ago for 1000 tons of fully refined wax also remained open as the week ended.

Chicago T. C. Prices Lower After Crude Cut

Staff Special

CHICAGO, March 7

REDUCTIONS in retail gasoline and kerosine prices by the Standard of Indiana and in Mid-Continent crude oil by the Stanolind Crude Purchasing Co. on March 5 and subsequent reductions of approximately 0.25 cent in tank car gasoline prices, were the outstanding events of the week in the Chicago market.

Although most of the trade had been expecting both the gasoline and crude reductions, nevertheless they had a disturbing effect on the market. Conditions still were rather unsettled at the end of the week. Reductions of as much as 0.25-cent were made in tank car prices by some marketers and refiners, while others said they were more or less out of the market until conditions had become more settled.

Most of the Chicago trade said they had enjoyed a comparatively good demand for gasoline and kerosine for prompt shipment prior to the reductions, but that afterwards jobbers were in the market only for goods they had to have.

Considerable difference of opinion was prevalent among the trade as to the immediate outlook for the gasoline market. Some sellers believed that the crude and tank wagon cuts had been discounted and that the tank car market would not move any lower. Others thought that the "bottom" had not been reached and were expecting further reductions. Some "short selling" of gasoline and kerosine was noted, but on the whole, most of the trade were unwilling to take many chances on the market.

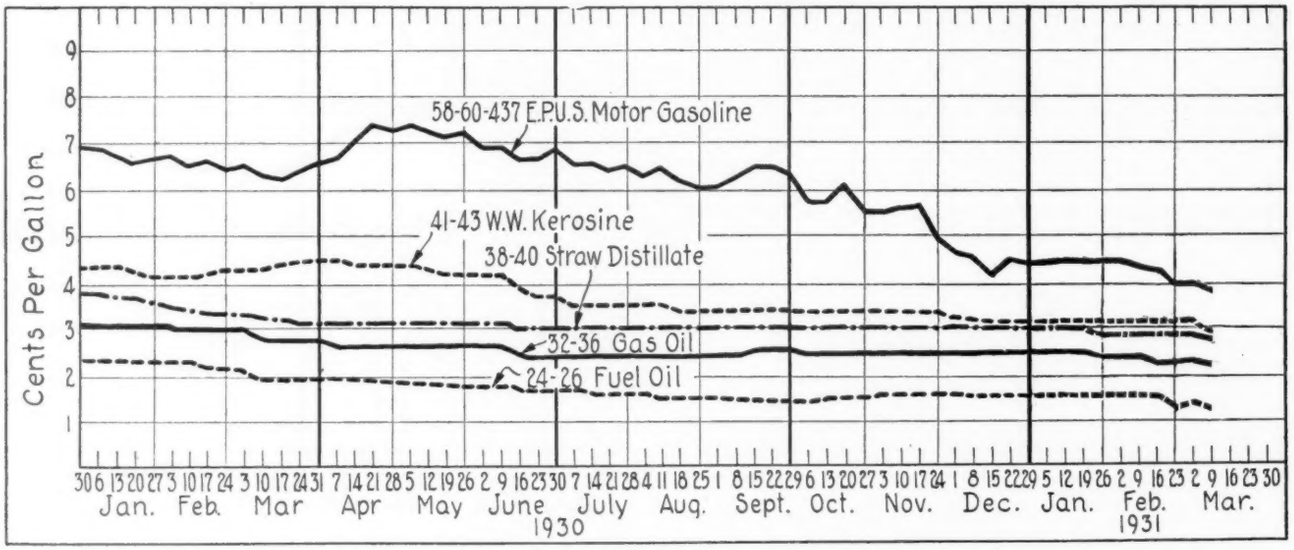
Most sales of U. S. Motor gasoline were reported at 3.75 to 4.125 cents at the beginning of the week and 3.50 to 3.875 cents on March 7. One jobber reported he bought a few cars of U. S. Motor at 3.375 cents on March 6 from a West Texas refiner. However, by far the majority of sellers were asking at least 3.50 cents for full specification U. S. Motor. Carlot marketers said that in a few instances they could buy Motor at 3.25 cents, but that 3.375 cents was the low in most cases.

A number of traders said they had enjoyed a fairly brisk demand for kerosine prior to the tank wagon reduction, but that few orders had been received since then. Most quotations from good 41-43 w.w. kerosine were at 2.875 to 3 cents on March 7, although some material with a high end point was reported available at lower prices.

Heavy snows accompanied by lower temperatures were reported as prevailing over most of the middle west Friday and Saturday. This resulted in a better movement of domestic burning oils. Most Chicago tank wagon distributors reported they were doing a rushing business March 7. However, the demand was not yet sufficient to cause much improvement in the tank car demand, although some pick-up was noted in movement against contracts. Gas oil and distillate prices were somewhat lower early in the week. Fuel oils of good quality remained generally unchanged in price.

Some precipitation is likely over the Standard of Indiana territory next week, especially in the northern sections, says the Chicago weather bureau. Temperatures will be below normal most of the week.

Current Prices of Principal Mid-Continent Refined Products


Cents Per Gallon
58-60-437 E.P.U.S. Motor Gasoline
41-43 W.W. Kerosine
38-40 Straw Distillate
32-36 Gas Oil
24-26 Fuel Oil
Jan. Feb. Mar Apr May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.
1930
1931

Prices shown are in Group 3 basis and extended to date shown in Refinery Market Tables Section of this issue

Crude Price Changes

TULSA.—On March 10 Carter Oil Co. met the Stanolind crude cut in Oklahoma and Kansas where it purchases on a gravity basis, and The Texas Co. met it in Oklahoma only.

HOUSTON.—On March 10 Humble Oil & Refining Co. met the Stanolind cut in all Texas fields, except Gulf Coastal Texas. Its reductions in the following fields amounted to:

Twelve to 40 cents in North Texas, Ranger, Mexia, Powell, Boggy Creek, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona; 5 to 17 cents in the Texas Panhandle; 15 to 39 cents in West Texas; 15 to 30 cents in south and southwest Texas; and 10 to 34 cents in New Mexico.

Humble's gravity schedule in North and North Central Texas fields begins with below 29 degrees, at 43 cents, and ends with maximum grade of 40 and above at 67 cents, same as Stanolind's. The counties in North Texas—Wichita, Wilbarger, Archer and Northern Young —which had been from 10 to 28 cents lower than other North Texas fields since Jan. 14, were placed back on the same gravity and price schedule with the rest of North Texas fields.

Its reductions in Gray, Carson and Hutchinson counties of the Texas Panhandle included a revision of the gravity schedule on grades lower than 35 degrees. All oil below 35 gravity is now posted at 43 cents in Gray county, and at 38 cents in Carson and Hutchinson counties, indicating a cut of from 5 to 17 cents on these lower grades in all three counties. Formerly, the minimum grades was below 29 at 48 cents in Gray, and at 43 cents in Carson and Hutchinson counties.

Differential for each succeeding degree of gravity remains unchanged at 2 cents, and maximum grade remains 40 and above, at 55 cents in Gray, and 50 cents in Carson and Hutchinson.

Pecos and Winkler in West Texas are both 40 cents flat for all grades. Prices formerly were from 55 cents for below 25 gravity, up to top price of 79 cents for 36 and above.

The rest of West Texas fields, including Crane, Upton, Crockett, Ector, Howard and Glasscock counties, is posted at new price of 35 cents flat for all grades. Prices formerly were from 50 cents for below 25 gravity up to top price of 74 cents for 36 and above.

In Lea county, New Mexico, prices were reduced 10 to 34 cents, to new price of 40 cents flat for all grades. Lea county prices formerly were same as in Crane, Upton, etc., of West Texas.

In south and southwest Texas fields, Humble posted Salt Flat and Darst Creek crude at 60 cents, indicating a cut of 30 cents; and for Pettus crude, 95 cents, a cut of 15 cents.

(*Continued on Page* 88)

Shipments From Southern California

LOS ANGELES, Mar. 5—Shipments of bulk petroleum from southern California ports to Foreign and Atlantic Seaboard ports for week ended Feb. 28 totaled 941,566 barrels as compared with 1,347,305 barrels shipped to the same ports the previous week. Destination and quantity of shipments were as follows:

Destination	Crude	Gasoline	Diesel	Kerosine	Fuel	Total
Pacific For.	132,327	71,218	88,602	41,359	398,619	732,125
Atlantic Dom.	.....	209,441	.....	.....	.....	209,441
Atlantic For.	.....	.....	.....	.....	.....	.....

Prices 10 Years Ago
March 7, 1921

	Oklahoma	Penna.
58-60 U. S. Motor.....	12.75-13.50c	18.50c
80-84 Natural	9.00-10.00c	.....
Kerosine (42-43 Okla.; 47 w. w. Pa.)	4.25-4.50c	10.00c
Fuel Oil (24-26 Okla.; 36-40 Pa.)	$0.65-$0.75	4.50-4.75c
Crude (Okla. 35-35.9)	$1.75	$3.00
Chicago tank wagon (no state tax)		23.00c

Prices A Year Ago
March 10, 1930

	Oklahoma	Penna.
58-60 U. S. Motor.....	6.4174c	7.25-7.75c
Grade A Natural.....	5.50c	.....
Kerosine (Okla. 41-43; Pa. 47 w. w.).....	4.125-4.375c	6.50c
Fuel Oil (Okla 24-26; Pa. 36-40)	$0.80-$0.85	4.50-4.75c
Crude (Okla. 35-35.9)..	$1.17	$2.75
Chicago tank wagon (including 3c tax)		17.00c

Mid-Continent Refinery Markets

Markets Unsettled by Crude and T.W. Cuts

Staff Special
TULSA, March 7

THE Mid-Continent market was tossed into an unsettled condition the first week of March by the crude oil, tank wagon and service station price reductions announced by Standard Oil Co. of Indiana and its subsidiary, the Stanolind Pipe Line Co.

Regardless of how long a crude change or a gasoline price change has been anticipated the actual occurrence never fails to disturb the refinery market to a considerable degree. Prices for gasoline lost ground in all districts, while those for other refined products experienced slight recessions in view of the comparatively slow demand at the present time.

Even before the price changes for crude and gasoline were announced the market had continued its downward trend. Buyers early in the week obtained U. S. Motor from North Texas and West Texas at 3.625 cents, and marketers bought at 3.50 cents a gallon.

The Oklahoma refiners resisted the competition as much as possible but after starting the week at 3.875 to 4.125 cents for U. S. Motor, prices declined to 3.75 cents low prior to the crude change. By March 7 the price range for U. S. Motor in Oklahoma was 3.625 to 4 cents.

Jobbers, as usual, withdrew from the market as much as possible when the crude changes were announced, and demand the latter part of the week was exceedingly light, several refiners reported.

Louisiana and Arkansas refiners, who had experienced no crude cuts at the time this was written, had not reduced their quotations March 7, but indications were that they would make some adjustments early next week, in order to get their prices more nearly in line with those of competitive districts.

It was too early after the crude and tank wagon changes to determine with any degree of accuracy just where the prices would stop. Many sales managers were of the opinion the price cuts would tend to stabilize the market at around present levels, and with any break in the weather, prices might move upward slightly before the end of the month.

Natural gasolines moved downward in sympathy with refined oils. There was little surplus material available but the prices had little strength to resist bearish offers. One or two large companies were understood to be buying some naturals for storage, but the reports were current that the large users were not interested in the market just at present and manufacturers had to content themselves with routine orders.

Price for Grade AA moved under 3 cents March 7, when some material was sold for 2.875 cents. Grades BB and C were pegged at 2.50 cents.

Kerosine prices in all districts moved down early in the week, with demand comparatively light and stocks reported to have increased at several plants. The reduction in tank wagon prices for kerosine March 5 gave the refinery prices still another shove.

Wheather conditions over the middle west also contributed somewhat to the slower demand for kerosines. Farmers have been unable to get into their fields with their tractors the past few weeks.

Fuel oil prices did not experience as much change in Oklahoma as did some of the other commodities, although the demand was reported light. Prices declined somewhat in Kansas and Texas, with those districts reported to have a surplus of stocks. The Arkansas and Louisiana refiners have railroad contracts which help them materially in disposing of their fuel oils.

Refiners making bright stocks reported there was little change in the demand the past week. Prices for the most part were unchanged with the exception of the 150-160 D. bright stock, 10 to 25 cold test. A check indicated the 15.50-cent oil had been taken off the market and the prevailing quotations March 7 were from 16 to 17 cents.

The 600 s. r. olive green oil was reported somewhat scarcer, particularly the better grades, and refiners were obtaining from 6 to 8 cents, the top price representing that obtained for the better grades.

Neutral oils prices were revised somewhat by a few refiners following the crude cut. Some of the changes amounted to as much as 1 cent a gallon.

Refiners manufacturing wax reported inquiries were only fair and prices dropped below 2 cents a pound for the 124-126 white crude scale.

Proposed Increase in Gas Tax In California Decried

LOS ANGELES, March 6

BEFORE approximately 1000 California oil men at the annual meeting of the California Oil and Gas Association here March 5, H. R. Macmillan, president, decried the present gasoline war on the Pacific Coast and opposed a bill now before the state legislature increasing the state gasoline tax.

He pointed out that Senate Bill 675 proposes an amendment to the gasoline tax that is aimed to prevent evasion of tax payments. It provides for the payment of tax monthly, instead of quarterly, as is now the practice. It gives the state a lien on the property of the refining company, designated in the bill as the distributor. In case of failure to pay the tax, the state controller may sell the property of the distributor at public sale to collect the tax.

"These provisions should assure the collection of the tax and no objection can be raised to them," said Mr. Macmillan. "But the bill goes further and requires a bond to secure payment of the tax. This bond must be not less than $1000 and not more than $100,000 and must be executed by a surety company. To obtain such a bond, it will be necessary to keep on deposit with the bonding company either cash in the full amount of the bond, or readily marketable securities of a like amount. This is placing an additional expense on the refining companies, which must be added, in the end, to the retail price of gasoline."

In the opinion of Mr. Macmillan, some of the independent companies would not be in a position to furnish a heavy bond, in which event the refinery would be closed.

Relative to the proposal to increase the gasoline tax, Mr. Macmillan said, "As it is, the state through the tax, reaps a greater profit per gallon than do the refining companies. Increasing the state tax will add an additional burden to the industry and at the same time increase the price to the consumer. If the gasoline tax is to be changed at all, it should be decreased, not increased."

In opposing outside control of the oil industry, Mr. Macmillan said, "Government control over business, either national or state, is undesirable except in cases where it is absolutely necessary. Once the state takes control, no person can tell how far that control may be extended."

PHILADELPHIA.—On March 11, Atlantic Refining Co. will reduce tank wagon and service station prices of gasoline 1 cent through Pennsylvania and Delaware. Last previous change in these two states was a 1-cent cut on Nov. 6, 1930.

Comparative Prices of 58-60 U. S. Motor Gasoline, 437 E. P., Group 3 and Point of Origin, to Jobbers Only

In Effect March 9

	Price F.O.B. Group 3	*Price F.O.B. Point of Origin*	*If for Particular Destination*
Oklahoma	3.625–4.00	3.625–4.00	
Kansas	3.625–3.75		S. O. Neb. & Indiana Territories, etc.
Kansas		4.00	Kansas only.
North Texas	3.625–3.875	3.50 –3.75	
West Texas	3.625–3.875	3.50 –3.75	
Louisiana-Arkansas	3.75 –4.00		Michigan, Ohio and Indiana.
Louisiana-Arkansas		4.50 –4.75	State or differential haul.
Indiana-Illinois	3.50–4.25	*	S. O. Indiana territory except Detroit and vicinity. For Ohio on delivered basis only.

*Shipments made from Indiana and Illinois refineries, according to conditions and freight rates; no prices F. O. B. point of origin can be given.

Chicago Tank Car Market

CHICAGO, March 7

REDUCTIONS in retail gasoline and kerosine prices by the Standard of Indiana and lower prices for Mid-Continent crude oil threw the Chicago market into an unsettled condition. These reductions were followed by lower tank car prices for gasoline and kerosine. Sales of U. S. Motor were reported mostly at 3.75 to 4.125 cents prior to March 5 and at 3.50 to 3.875 cents by the end of the week. Spot demand was fairly good during the first half of the week and quiet the latter half. Kerosine, distillate and gas oil prices were off about 0.125 cent. Good grades of fuel oils showed little change.

Following prices represent majority of sales made on Group 3 freight basis, although shipments may originate in other refining districts, such as North and West Texas, Arkansas, Louisiana, Indiana, Illinois, Kentucky, etc.

	Prices March 9	Prices March 2	Prices Feb. 23
58-60 U. S. Motor, 437 e.p.	3.50 – 3.875	3.75 – 4.125	3.875– 4.25
†56-62 400-437 e.p. anti-knock gasoline	3.875– 4.875	4.25 – 5.00	4.50 – 5.375
60-62 437 e.p. gasoline	3.625– 4.00	3.875– 4.125	4.00 – 4.375
60-62 400 e.p. gasoline	3.75 – 4.125	4.00 – 4.375	4.125– 4.50
64-66 375 e.p. gasoline	4.25 – 4.50	4.625– 4.875	4.625– 5.00
68-70 350-360 e.p. gasoline	4.625– 5.00	4.75 – 5.125	4.875– 5.375
*Domestic Aviation Gasoline	7.00 – 7.25	7.00 – 7.25	7.00 – 7.25
41-43 w.w. kerosine	2.875– 3.00	3.00 – 3.25	3.00 – 3.25
42-44 w.w. kerosine	3.00 – 3.25	3.125– 3.50	3.25 – 3.50
38-40 p. w. distillate	2.50 – 2.75	2.625– 2.75	2.625– 2.75
38-40 straw distillate	2.50 – 2.625	2.50 – 2.75	2.625– 2.75
32-36 ordinary dark gas oil	1.75 – 2.00	1.75 – 2.00	1.875– 2.125
32-36 dark zero gas oil	2.125– 2.375	2.25 – 2.375	2.25 – 2.50
32-36 straw zero gas oil	2.25 – 2.50	2.375– 2.50	2.50 – 2.625
28-30 zero fuel oil (per bbl.)	$0.80 –$0.85	$0.80 –$0.85	$0.85 –$0.90
28-30 fuel oil (per bbl.)	$0.775–$0.825	$0.775–$0.825	$0.80 –$0.85
24-26 fuel oil (per bbl.)	$0.575–$0.625	$0.575–$0.625	$0.60 –$0.65
18-22 fuel oil, low sulfur (per bbl.)	$0.475–$0.525	$0.475–$0.525	$0.50 –$0.55
18-22 fuel oil, high sulfur zero (per bbl.)	$0.50 –$0.55	$0.50 –$0.55	$0.55 –$0.60
14-16 fuel oil (per bbl.)	$0.375–$0.425	$0.375–$0.425	$0.40 –$0.425

*Prices are based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167° F., and not less than 122° F.; 50% recovery at 221°; 90% at 311°; 96% at 347°; end point 374° F. Gasoline of fighting grade specifications in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

†Over 45% benzol equivalent. Prices represent quotations and sales.

Crude Price Changes

(*Continued from Page* 86)

Mirando and Gulf Coastal crude were unchanged.

NEW ORLEANS.—On March 10 Standard Oil Co. of Louisiana reduced all grades of North Louisiana-Arkansas crude in amounts ranging from 22 to 40 cents, posting same gravity and price schedule as Stanolind company on Mid-Continent crudes.

The cut affects Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton, De Soto, Sabine, Cotton Valley, Sarepta, and Carterville. Minimum grade of below 29 gravity is 43 cents, with 2-cent differential for each succeeding degree of gravity up to top grade of 40 and above, which is 67 cents.

It also reduced Smackover crude 25 cents, making new price 45 cents per barrel. Bellevue was cut 55 cents, making new price 45 cents per barrel.

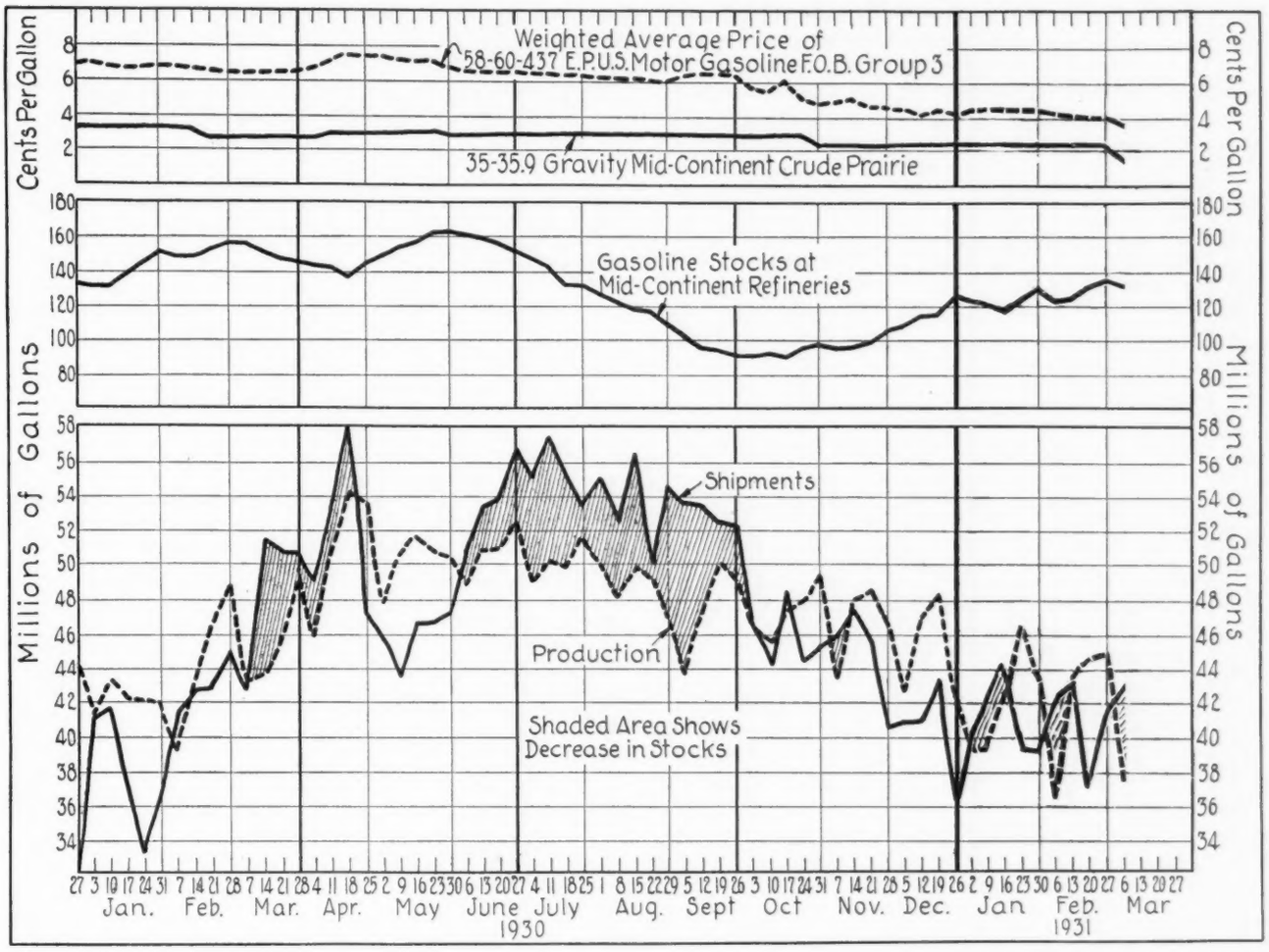
SAN FRANCISCO.—On March 10 Standard Oil Co. of California met Union Oil Co.'s reductions on all California crude, in amounts ranging from 5 to 80 cents, depending on gravity.

OIL CITY, PA.—On March 10 Joseph Seep Purchasing Agency reduced Corning, O., crude 25 cents, making new price 90 cents per barrel. Last previous change was a 10-cent cut on Oct. 28, 1930.

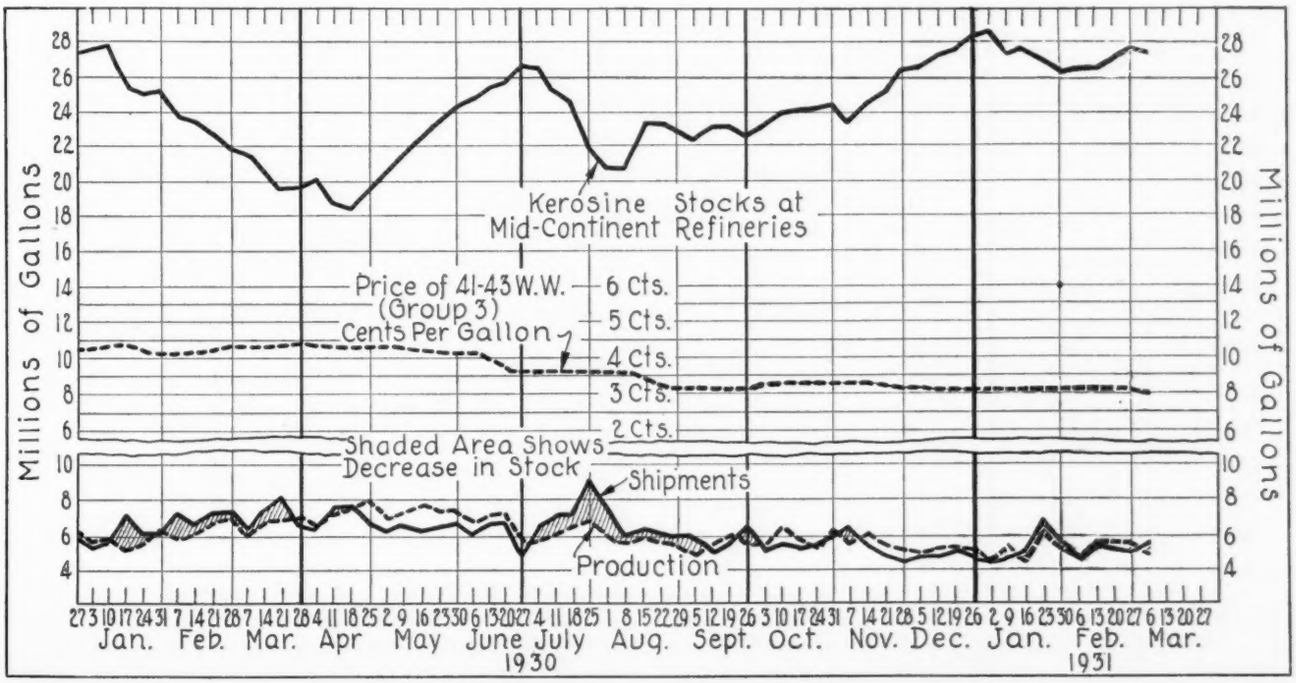
(*See Also pages* 103 *and* 105)

Barometer of Mid-Continent Refinery Market—Week Ending March 6

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News


Cents Per Gallon
Weighted Average Price of 58-60-437 E.P.U.S. Motor Gasoline F.O.B. Group 3
35-35.9 Gravity Mid-Continent Crude Prairie
Gasoline Stocks at Mid-Continent Refineries
Millions of Gallons
Shipments
Production
Shaded Area Shows Decrease in Stocks
Jan. Feb. Mar. Apr. May June July Aug. Sept Oct Nov. Dec. Jan Feb. Mar
1930
1931

Prices shown above are extended to date shown in Refinery Market and Crude tables in Market section of this issue and stocks, shipments and Production are extended to date as shown in the table on page 82



Refinery Markets on Light Oils and Lubricants

Prices given below are in cents per gallon, except where $ is shown. They represent prices made only to domestic jobbers who resell to the consuming public, except where otherwise noted.

(These Refinery Prices compiled in the OIL PRICE HANDBOOK for a whole year)

GASOLINE AND NAPHTHA

OKLAHOMA (F. o. b. Oklahoma refineries)

	Prices March 9	Prices March 2	Prices Feb. 23
48-50 450 e.p. naphtha	3.50 – 3.75	3.75	3.75
50-52 450 e.p. naphtha	3.50 – 3.75	3.75	3.75
56-58 450 e.p. gasoline	3.50 – 3.625	3.75 – 3.875	3.75 – 3.875
58-60 450 e.p. gasoline	3.50 – 3.625	3.75 – 3.875	3.75 – 3.875
58-60 U.S. Motor 437 e.p.	3.625– 4.00	3.875– 4.125	3.875– 4.125
60-62 437 e.p. gasoline	3.75 – 4.125	4.00 – 4.25	4.00 – 4.25
60-62 400 e.p. gasoline	4.00 – 4.25	4.125– 4.375	4.125– 4.375
64-66 390 e.p. gasoline	4.25	4.25 – 4.75	4.375– 4.75
64-66 375 e.p. gasoline	4.25 – 4.50	4.50 – 5.00	4.75 – 5.00
68-70 350-360 e.p. gasoline	4.75	4.75 – 5.25	5.00 – 5.50
‡Domestic Aviation Gasoline	6.50 – 7.00	6.50 – 7.00	7.00 – 8.00

‡Prices based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167° F., and not less than 122° F.; 50% rec. at 221°; 90% at 311°; 96% at 347°; end point, 374°F. Fighting grade in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

52-54 Naphtha	5.75	5.75 – 6.00	5.75 – 6.00
54-56 Naphtha	5.75	5.75 – 6.00	5.75 – 6.00
58-60 U.S. Motor 437 e.p.	5.75 – 5.875	5.75 – 6.00	5.75 – 6.00
60-62 400-410 e.p. gasoline	5.75 – 6.00	5.75 – 6.50	6.00 – 6.50
64-66 390 e.p. gasoline	6.25 – 6.75	6.375– 6.75	6.375– 6.75
68-70 350-360 e.p.	7.00 – 7.75	7.00 – 7.75	7.00 – 7.75

OHIO (Quotations of S. O. Ohio. 4c state tax to be added.)

U. S. Motor Gasoline

Ohio, delivery at any point	8.00	8.00	8.00

KANSAS (F. o. b. refinery Kansas destination)

58-60 U.S. Motor 437 e.p.	4.00	4.125– 4.50	4.125– 4.50
60-62 437 e.p. gasoline	4.00 – 4.25	4.25 – 4.625	4.25 – 4.625
60-62 400 e.p. gasoline	4.50	4.50 – 4.75	4.50 – 4.75
64-66 375 e.p. gasoline	5.00	5.00 – 5.25	5.00 – 5.25

NORTH TEXAS (F. o. b. North Texas refineries)

56-58 450 e.p. gasoline	3.50 – 3.625	3.75	3.75
58-60 450 e.p. gasoline	3.50 – 3.625	3.75	3.75
58-60 U.S. Motor 437 e.p.	3.50 – 3.75	3.75 – 4.00	3.875– 4.00
60-62 400 e.p. gasoline	3.75 – 4.00	4.00 – 4.25	4.125– 4.25
64-66 390 e.p. gasoline	4.00 – 4.25	4.125– 4.375	4.25 – 4.50
64-66 375 e.p. gasoline	4.375– 4.625	4.375– 4.625	4.50 – 4.75
68-70 350-360 e.p. gasoline	4.75	4.75 – 5.00	5.00 – 5.25

****WEST TEXAS** (F. o. b. West Texas refinery, for unrestricted shipment)

50-52 naphtha	3.375– 3.50	3.50	3.625– 3.75
58-60 437 e.p. gasoline	3.375– 3.625	3.625– 3.75	3.625– 3.75
58-60 U.S. Motor 437 e.p.	3.50 – 3.75	3.75 – 4.00	3.875– 4.00

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

58-60 U.S. Motor 437 e.p.	4.75	4.75	5.00

ARKANSAS (Ark., N. La. and Miss. destination)

58-60 U.S. Motor 437 e.p.	4.50	4.50	4.75

CALIFORNIA (3c tax to be added to California gasoline prices if used in state.)

54-58 U.S. Motor 437 e.p.	6.00 – 7.00	8.75 –10.00	9.25 –10.25
54-58 U.S. Motor, for outside state shipment	6.00 – 7.00	8.00 – 9.25	8.00 – 9.25
58-61 375-400 e.p. gasoline	8.50 – 9.50	11.00 –12.00	11.00 –12.00
42-45 Engine Distillate 445-480 e.p.	6.00 – 7.00	7.75 – 9.00	8.00 – 9.00

NATURAL GASOLINE

(Note: End point of all grades, not over 375F. Corrosion test adopted Oct. 1, 1927; A.S.T.M. Method D130-27T; doctor test, July 2, 1928.)

OKLAHOMA (F. o. b. Oklahoma refineries)

	Prices March 9	Prices March 2	Prices Feb. 23
Grade AA, 80-87.9, 90% Recovery	3.00	3.00	3.25 – 3.50
Grade A, 72-79.9, 90% Recovery	3.25 – 3.375	3.375– 3.50	3.625– 3.75
Grade BB, 84-92, 85% Recovery	2.50	2.625– 2.75	2.75
Grade B, 76-83.9, 85% Recovery	2.625– 2.75	2.75	3.00
Grade C, 80-92, 78% Recovery	2.50	2.50 – 2.75	2.75

NORTH TEXAS (F. o. b. Breckenridge)

	Prices March 9	Prices March 2	Prices Feb. 23
Grade AA, 80-87.9, 90% Recovery	3.00	3.00	3.25 – 3.50
Grade A, 72-79.9, 90% Recovery	3.25 – 3.375	3.375– 3.50	3.625– 3.75
Grade BB, 84-92, 85% Recovery	2.50	2.625– 2.75	2.75
Grade B, 76-83.9, 85% Recovery	2.625– 2.75	2.75	3.00
Grade C, 80-92, 78% Recovery	2.50	2.50 – 2.75	2.75

NORTH LOUISIANA (F. o. b. Monroe District)

Grade AA	†3.125	†3.25	†3.50
Grade BB	†2.625	†2.875	†3.00
Grade C	†2.625	†2.875	†3.00

CALIFORNIA (F. o. b. California refineries)

75-85, 375-390 e.p. for blending	5.00 – 6.00	5.25 – 6.00	5.25 – 5.75

BURNING OILS

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

45 w.w. kerosine	4.625– 5.00	4.75 – 5.00	4.75 – 5.00
46 w.w. kerosine	4.875– 5.25	5.00 – 5.25	5.00 – 5.25
47 w.w. kerosine	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375
300 mineral seal	5.50 – 6.00	5.50 – 6.00	5.50 – 6.00

OKLAHOMA (F. o. b. Oklahoma refineries)

41-43 w.w. kerosine	2.875– 3.00	3.00 – 3.25	3.00 – 3.25
42-44 w.w. kerosine	3.125– 3.25	3.25 – 3.50	3.25 – 3.50

KANSAS (F. o. b refinery Kansas destination)

41-43 w.w. kerosine	3.25	3.25 – 3.50	3.25 – 3.50
42-44 w.w. kerosine	3.50	3.50 – 3.75	3.50 – 3.75

NORTH TEXAS (F. o. b. North Texas refineries)

40-42 w.w. kerosine	2.625– 2.75	2.75 – 3.00	2.75 – 3.00
41-43 w.w. kerosine	2.75 – 3.125	2.875– 3.125	2.875– 3.125

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

41-43 w.w. kerosine	3.75	3.75	4.00
42-44 w.w. kerosine	4.00	4.00	4.25

ARKANSAS (Ark., N. La. and Miss. destination)

41-43 w.w. kerosine	3.75	3.75	4.00

CALIFORNIA (F. o. b. California refineries)

38-40 w.w. kerosine	5.00 – 6.00	5.00 – 6.00	4.75 – 6.00

NEUTRAL OIL

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

Vis.		(Viscosity at 70° F.)	
200 No. 3 Assoc. Filt.	†22.00 –23.00	†19.00 –20.00	†19.00 –20.00
180 No. 3 Assoc. Filt.	†19.00 –20.00	†17.50 –18.50	†17.50 –18.50
150 No. 3 Assoc. Filt.	†17.00 –17.50	†15.50 –16.50	†15.50 –16.50

Note: Low cost test neutral oils are quoted approximately 6c per gal. higher than prices shown above.

		(Non Viscous)	
34 Grav. 330-340 Flash	5.50 – 6.00	5.50 – 6.00	5.50 – 6.00

****MID-CONTINENT** (F. o. b. Mid-Continent refineries)

Vis. Color		(Viscosity at 100° F.)	
100—No. 2	5.25 – 5.50	5.50	5.50
150—No. 3	6.75 – 7.00	6.75 – 7.00	6.75 – 7.00
150—No. 4	6.50	6.50	6.50
180—No. 3	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
180—No. 4	7.75 – 8.00	7.75 – 8.00	7.75 – 8.00
180—No. 5	7.50	7.50	7.50
200—No. 3	9.75 –10.00	9.75 –10.00	9.75 –10.00
200—No. 4	9.25 – 9.50	9.25 – 9.50	9.25 – 9.50
200—No. 5	8.75 – 9.00	8.75 – 9.00	8.75 – 9.00
220—No. 3	11.50	11.50	11.50
220—No. 4	11.00	11.00	11.00
220—No. 5	10.00	10.00	10.00
240—No. 3	13.50	13.50	13.50
240—No. 4	11.00 –12.00	12.50	12.50
240—No. 5	10.50 –11.50	11.50	11.50
280—No. 3	15.00	15.00	15.00
280—No. 4	13.00 –14.00	14.50	14.50
280—No. 5	12.00 –13.00	13.50	13.50

Note: Quotations for 0 to 10 cold test neutral oils are 1 to 2 cents higher, depending on the grade.

†Prices nominal ††Only one refiner quoting *Quotations only

****Prices represent Quotations and Sales.**

Refinery Markets Wax, Lubricants, Heavy Oil

Prices given below are in cents per gallon, except where $ is shown. They represent prices made only to domestic jobbers who resell to the consuming public, except where otherwise noted.

(For quick reference to Refinery Prices, get the OIL PRICE HANDBOOK, published annually)

GULF COASTAL (F. o. b. Gulf Coastal refineries)

Vis. Color	Prices March 9 (Viscosity at 100° F., pour test 0)	Prices March 2	Prices Feb. 23
100—No. 2 Pale	5.50 – 6.25	5.50 – 6.25	5.50 – 6.25
200—No. 3 Pale	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
300—No. 3 Pale	9.00 – 9.50	9.00 – 9.50	9.00 – 9.50
500—No. 3½ Pale	10.00 –10.50	10.00 –10.50	10.00 –10.50
750—No. 4 Pale	11.50 –12.50	11.50 –12.50	11.50 –12.50
1200—No. 4 Pale	14.50 –15.00	14.50 –15.00	14.50 –15.00
2000—No. 4-5 Pale	15.50 –16.00	15.50 –16.00	15.50 –16.00
200—No. 5½ Red Oil	7.00 – 7.50	7.00 – 7.50	7.00 – 7.50
300—No. 5½ Red Oil	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
500—No. 6 Red Oil	9.00 –10.00	9.00 –10.00	9.00 –10.00
750—No. 6 Red Oil	11.25 –11.75	11.25 –11.75	11.25 –11.75
1200—No. 5-6 Red Oil	13.50 –14.00	13.50 –14.00	13.50 –14.00
2000—No. 6 Plus Red Oil	15.50 –16.00	15.50 –16.00	15.50 –16.00

‡CALIFORNIA (F. o. b. California refineries)

Vis. Color	(Viscosity at 100° F.)		
100—No. 3	9.50 –10.00	9.50 –10.00	9.50 –10.00
200—No. 3	11.50	11.50	11.50
300—No. 3	13.00	13.00	13.00
450—No. 3	15.50	15.50	15.50
550—No. 3	16.50	16.50	16.50
600—No. 3	17.00	17.00	17.00
200—No. 5	11.00	11.00	11.00
300—No. 5	12.00	12.00	12.00
400—No. 5	14.00	14.00	14.00
500—No. 5	15.00	15.00	15.00
600—No. 5	16.00	16.00	16.00
700—No. 7	18.00	18.00	18.00

‡Neutral oils not manufactured commercially in California.

CYLINDER STOCKS

MID-CONTINENT (F. o. b. Mid-Continent refineries)

(Cylinder stock prices represent quotations and sales to domestic jobbers only).

190-200 Vis. D at 210° Brt. St.	23.00	23.00	23.00
150-160 Vis. D at 210° Brt. St., 0-10 cold test	17.50 –19.00	17.50 –19.00	17.50 –19.00
150-160 Vis. D at 210° Brt. St., 10-25 cold test	16.00 –17.00	15.50 –17.00	16.50 –17.00
150-160 Vis. D Brt. Stock, 25-40 cold test	15.00 –16.00	15.00 –16.00	16.00
150-160 Vis. E 210° Brt. St.	15.00 –16.00	15.00 –16.00	15.00 –16.00
600 St. Ref. Olive Green	6.00 – 8.00	5.50 – 6.00	5.50 – 6.00
600 St. Ref. Dark Green	4.50 – 5.50	4.50 – 5.50	4.50 – 5.50
Black Oil	4.00 – 5.00	4.00 – 5.00	4.00 – 5.00

PENNSYLVANIA (F. o. b. Western Penna. refineries) (A.S.T.M. Tests)

600 Steam Refined, filterable	8.25 – 8.50	8.25 – 9.00	8.25 – 9.00
650 Steam Refined	12.00 –13.00	12.25 –13.00	12.25 –13.00
600 Flash	13.50 –14.50	13.50 –14.50	13.50 –15.00
630 Flash	19.00 –20.00	19.25 –20.00	19.25 –20.00
600 Warren E	12.25 –13.00	12.25 –13.00	12.50 –13.50
600 Oil City E	12.00 –13.00	12.00 –13.00	12.00 –13.00
600 D Filtered	†14.50 –15.00	†14.50 –15.00	†14.50 –15.00
Cold Test Stocks, 140-150 vis. at 210°, 540-550 flash, No. 8 color, below 25 pour test	18.50 –19.00	18.00 –19.00	18.50 –19.00
No. 8 color, 25-35 pour test	18.00 –19.00	17.50 –18.00	17.00 –18.00
No. 8 color, above 35 pour test	17.50 –19.00	17.50 –18.00	17.00 –18.00

WAX

PENNSYLVANIA (Per pound, F. o. b. New York)

122-124 white crude scale a.m.p.	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375
124-126 white crude scale, a.m.p.	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375

****OKLAHOMA** (Per pound in barrels; in a few instances, per pound in burlap bags; F. o. b. Oklahoma refineries.)

124-126 White Crude Scale, a.m.p.	1.875– 2.00	2.00	2.00

DISTILLATE, GAS AND FUEL OIL

PENNSYLVANIA (For outside Pittsburgh district)

36-40 fuel oil	3.00 – 3.50	3.00 – 3.75	3.125– 3.75
30-34 fuel oil	3.125– 3.50	3.25 – 3.75	3.25 – 3.75
28-32 fuel oil	3.125– 3.50	3.25 – 3.75	3.25 – 3.75

Note: Zero cold test fuel oils are quoted 0.25c to 0.50c higher than prices shown above.

†Prices nominal ††Only one refiner quoting *Quotations only

OKLAHOMA (F. o. b. Oklahoma refineries)

	Prices March 9	Prices March 2	Prices Feb. 23
38-40 straw distillate	2.625– 2.875	2.75 – 2.875	2.75 – 2.875
36-38 straw distillate	2.50	2.50 – 2.75	2.50 – 2.75
32-36 straw gas oil	2.00 – 2.25	2.25 – 2.375	2.25 – 2.375
32-36 straw gas oil zero	2.25 – 2.375	2.375– 2.50	2.50 – 2.625
32-36 dark gas oil	1.75 – 2.00	1.75 – 2.125	2.00 – 2.125
32-36 dark gas oil zero	2.00 – 2.25	2.125– 2.375	2.25 – 2.50
28-30 zero fuel oil(per bbl.)	$0.80 –$0.85	$0.85 – 0.875	$0.85 – 0.875
28-30 fuel oil (per bbl.)	$0.75 –$0.80	$0.80 – 0.825	$0.80 – 0.825
26-28 fuel oil (per bbl.)	$0.60 –$0.70	$0.70 – 0.75	$0.70 – 0.75
24-26 fuel oil (per bbl.)	$0.50 –$0.55	$0.55 – 0.65	$0.55 – 0.65
22-26 fuel oil (per bbl.)	$0.475–$0.50	$0.475– 0.55	$0.475– 0.55
18-22 fuel oil (per bbl.)	$0.425–$0.475	$0.425– 0.475	$0.425– 0.475
16-20 fuel oil (per bbl.)	$0.40 –$0.425	$0.40 – 0.45	$0.40 – 0.45
14-16 fuel oil (per bbl.)	$0.40	$0.40 – 0.425	$0.40 – 0.425

KANSAS (F. o. b. refinery Kansas destination)

38-40 straw distillate	2.75 – 3.00	2.875– 3.25	2.875– 3.25
36-38 straw distillate	2.75	2.75 – 3.00	2.75 – 3.00
32-36 straw gas oil	2.50 – 2.625	2.50 – 2.625	2.50 – 2.625
18-22 fuel oil (per bbl.)	$0.50 –$0.60	$0.55 – 0.65	$0.55 – 0.65
10-14 fuel oil (per bbl.)	$0.425–$0.50	$0.475– 0.55	$0.475– 0.55

NORTH TEXAS (F. o. b. North Texas refineries)

38-40 straw distillate	2.50 – 2.75	2.50 – 2.75	2.50 – 2.75
38-40 p.w.treated distillate	2.625– 2.875	2.625– 3.00	2.625– 3.00
32-36 gas oil, cracked	2.00 – 2.25	2.125– 2.25	2.25 – 2.50
32-36 St. reduced gas oil	1.75 – 2.00	1.75 – 2.125	2.00 – 2.25
24-26 fuel oil (per bbl.)	$0.375–$0.425	$0.425– 0.45	$0.425– 0.45
20-24 fuel oil (per bbl.)	$0.35 –$0.40	$0.40 – 0.45	$0.40 – 0.45
18-22 fuel oil (per bbl.)	$0.325–$0.35	$0.35 – 0.40	$0.35 – 0.40

****WEST TEXAS** (F. o. b. West Texas refinery, for unrestricted shipment.

34-38 gas oil	2.00 – 2.25	2.00 – 2.25	2.00 – 2.25
30-32 gas oil	1.625– 2.00	1.75 – 2.00	1.75 – 2.00
28-30 zero gas oil	2.125– 2.375	2.125– 2.375	2.125– 2.375
18-22 fuel oil (per bbl.)	$0.375– 0.40	$0.375– 0.40	$0.375– 0.40

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

32-36 gas oil, dark	2.50	2.50 – 3.00	*3.25
32-36 gas oil, straw	2.50	2.50 – 3.00	*3.25
14-16 fuel oil (per bbl.)	$0.60 –$0.70	$0.60 – 0.70	$0.75 –$0.85

ARKANSAS (Ark., N. La. and Miss. destination)

32-36 gas oil, straw	2.50	2.75	2.75 – 3.00
32-36 dark gas oil	2.50	2.75	2.75 – 3.00
28-30 gas oil	2.25	2.50	2.50 – 2.75
20-24 fuel oil (per bbl.)	$0.75	$0.85	$0.85 – 0.90
9-12 fuel oil (per bbl.)	$0.65	$0.70	$0.70 –$0.75
Black oil	3.25	3.25	3.25

CALIFORNIA (F. o. b. San Joaquin Valley. Nominal pipe line charge to San Francisco 24c per bbl. more and to San Pedro 20c per bbl. more.)

14-18 fuel oil (per bbl.)	$0.45 –$0.60	$0.35 –$0.60	$0.40 –$0.65
14-18 Bunker oil (per bbl.)	$0.60 –$0.85	$0.60 –$0.85	$0.60 –$0.85
30-34 gas oil (per bbl.)	$0.85 –$1.15	$0.80 –$1.05	$0.85 –$1.15
27 Plus Diesel oil (per bbl.)	$0.80 –$1.05	$0.75 –$1.00	$0.75 –$1.05

PETROLATUMS

PENNSYLVANIA (Per pound, in barrels, carload lots, f. o. b. refinery. In tank cars ⅝c to ¾c per pound less.) Two refiners quoting.

Snow White	7.00 – 8.00	7.00 – 8.00	7.00 – 8.00
Lily White	6.125– 7.00	6.125– 7.00	6.125– 7.00
Cream White	5.125– 6.00	5.125– 6.00	5.125– 6.00
Light Amber	2.875– 3.00	2.875– 3.00	2.875– 3.00
Amber	2.625– 2.75	2.625– 2.75	2.625– 2.75
Red	2.00 – 2.50	2.00 – 2.50	2.00 – 2.50

PETROLEUM COKE

****OKLAHOMA** (F. o. b. Oklahoma refineries)

	(Per ton in car lots)		
Lump	$4.50 –$5.00	$4.50 –$5.00	$4.50 –$5.00
Still run	$3.00	$3.00	$3.00
Breeze	$2.00	$2.00	$2.00

****Prices represent Quotations and Sales**

Two Attacks on Louisiana Gasoline Tax Pending

SHREVEPORT, March 7.—Two tax cases which may have a far reaching effect on the Louisiana state gasoline tax law, have been brought into court for hearing here recently, with a decision handed down in one, and a notification for attorneys to file briefs in the other.

The decision handed down by a district judge March 4, was in a case filed by an Arkansas refiner against the state for seizure of gasoline for nonpayment of tax. The refiner alleged he had sold the gasoline to a bus company operating interstate passenger lines, and that the gasoline was imported from Arkansas to Louisiana to be used in interstate transportation, and therefore was not taxable.

The judge ruled that under the present law the gasoline was not taxable, since the gasoline had been imported for use in interstate transportation, and to tax the oil would be in violation of the federal laws. The case, which was filed primarily as a test case, will be appealed.

The other case was in federal court. The Ouachita Valley Refining Co. at El Dorado, Ark., filed injunction proceedings to prevent the state from obtaining writs of attachment in state courts to force collection of state gasoline tax on gasoline shipped into the State. The federal case goes further than the state case on which the district judge ruled in favor of the refiner, in that the petition asks that the state tax supervisor be restrained from collecting a tax on any gasoline shipped into the state.

A considerable amount of price cutting in Louisiana has been due, it was said, to refiners shipping gasoline into the state, and the purchasers evading the payment of tax on the grounds that the gasoline was an imported product and therefore not taxable.

Draft Code for Safe Handling of Oils

CHICAGO, March 5.—Sub-committees of the committee on accident prevention in marketing of the American Petroleum Institute are studying various operating problems for inclusion of the studies in a code or manual of safe practices in handling petroleum products.

The manual will cover the handling of products from the spotting of a tank car at a marketer's bulk plant to delivery of the goods to the ultimate consumer. Chapter topics decided on already include: unloading of tank cars; care and operations of bulk plants; handling and storing of package goods; truck driving; service station operation; driving instructions for salesmen, and maintenance and repair of service stations and service station equipment.

R. E. Donovan, Standard Oil Co. of California, is chairman of the committee. H. N. Blakeslee is in charge of accident work with headquarters at the A. P. I. offices in Dallas. The committee intends to make Mr. Blakeslee's office a clearing house for accident prevention information.

The committee proposes to draft a standard form for the reporting of costs of accidents.

U. S. Survey of Gasoline Marketing Progresses

CHICAGO, March 5.—The Bureau of Foreign and Domestic Commerce and the Bureau of the Census of the U. S. Department of Commerce is progressing with a survey of gasoline marketing, Dr. John W. Frey of the commerce bureau told the American Petroleum Institute here this week.

Dr. Frey said the survey will embrace two phases: (1) the number of filling stations with their annual volume of business, and (2) wholesalers and retailers of gasoline with information pertaining to their sales and costs of operation.

An effort will be made to show how the information obtained can be used by the industry, he said.

A. P. I. Committee Will Survey Marine Fires

CHICAGO, March 5.—The committee on fire prevention in marketing of the American Petroleum Institute will make a survey of barge and tanker fires to provide a background of information on fire hazards on floating craft. Richard Wotowitch, Henry L. Doherty & Co., is chairman of the committee.

The committee this week indorsed the National Aeronautical Chamber of Commerce rules on handling of gasoline at airports.

Mr. Wotowitch reported to the general meeting of the institute's marketing division that the committee hoped to have ready for the general marketing committee a manual or code on fire prevention within the next 60 days.

Preparing Manual on Wastes

CHICAGO, March 5.—A manual on elimination of wastes in marketing petroleum is being prepared by a committee of the American Petroleum Institute, of which O. H. Gunlock, Sinclair Refining Co., New York, is chairman.

Would Legalize Shipments To Light Oil Brokers

CHICAGO, March 5.—The committee on railroad transportation of the American Petroleum Institute, which met here this week, approved the wording of the Bureau of Explosives recommendation that inflammable liquids must not be shipped or subsequently reconsigned to parties which have no tankage or piping for handling liquids of 200 degrees F. flash point or less. The classification embraces gasoline and kerosine.

The recommendation formerly permitted shipments only to parties with such tankage and piping and precluded shipments to brokers for reconsignment. The recommendation, however, was never enforced to the letter, as shipments consigned to brokers for reconsignment have been accepted by railroads.

The committee is preparing a draft of a manual on the gaging of tank cars by the strapping and water methods.

CLEVELAND, March 10.—The southeastern regional code committee will meet March 19 in the Tutweiler hotel, Birmingham, Ala., and the following day the Alabama code committee will meet in the same place. S. C. Klein is secretary of the Alabama committee.

DAYTON, O.—Robert L. Hubler, general sales manager of the Ohmer Fare Register Co., was elected to the board of directors of that company at the annual stockholders meeting held in Rochester, N. Y., Feb. 9.

Other officers reelected are: John F. Ohmer, J. P. Breen, John S. McIntire, H. W. Baker and H. B. Ohmer of Dayton; J. F. Ohmer, Jr., of Los Angeles; Robert C. Lee, Cleveland and F. J. Lisman, New York.

Winchester Relates Motor Hauling Development

CHICAGO, March 5.—J. F. Winchester, in charge of automotive transportation for the Standard Oil Co. of New Jersey, addressed the Chicago chapter of the Society of Automotive Engineers, March 3, on motor hauling of petroleum products. The address was illustrated with stereopticon slides.

Mr. Winchester showed pictures of the development of motor hauling the last few years from the 350-gallon tank truck to the motor train and explained each piece of equipment.

He said the Standard of New Jersey's motor transportation operations were co-ordinated with all its other methods of transportation—pipe line, rail and marine. Approximately 17,000 units of motor equipment are under Mr. Winchester's general supervision in this country and abroad.

The Law of Chemical Patents

"THE Law of Chemical Patents" by Edward Thomas, is written for the man who is interested first in what a patent shows on its face; what its relation is to the prior art; and what its relation is to possible infringements.

The book tells what has been said in the courts on every phase of the subject. For example it cites *what the Courts have said on*:

Nature of a Patent; Disclosure in a Chemical Patent; the invention, its date and nature; nature of a patentable process; anticipation by prior uses; by prior publication; Nature of a Valid process claim in the patent; infringement of valid process claim; Permissible amendments; amending patent after it issues; double patenting and the joinder of inventions; assignments, licenses and royalties; contests between rival claimants; patent suits and patent evidence and some other more minor subheads.

Actions taken in courts are cited with complete references to the legal documents involved, with quotations of the statements pertinent to the subject under discussion. Each chapter is introduced with a brief outline of the subject, and the remainder is devoted to quotations which definitely answer questions on which information should be available to those holding patents or about to apply for them.

The present complicated situation with regard to patents on refining processes, especially cracking, makes this book particularly valuable to every refiner, oil attorney, chemist, etc. 420 pages.

———*Clip and Mail*———

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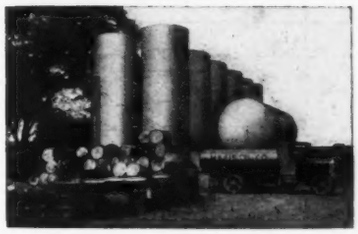

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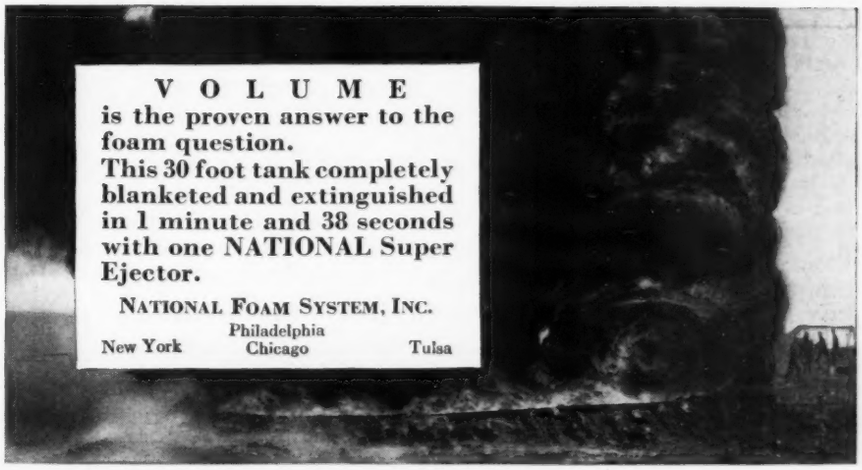
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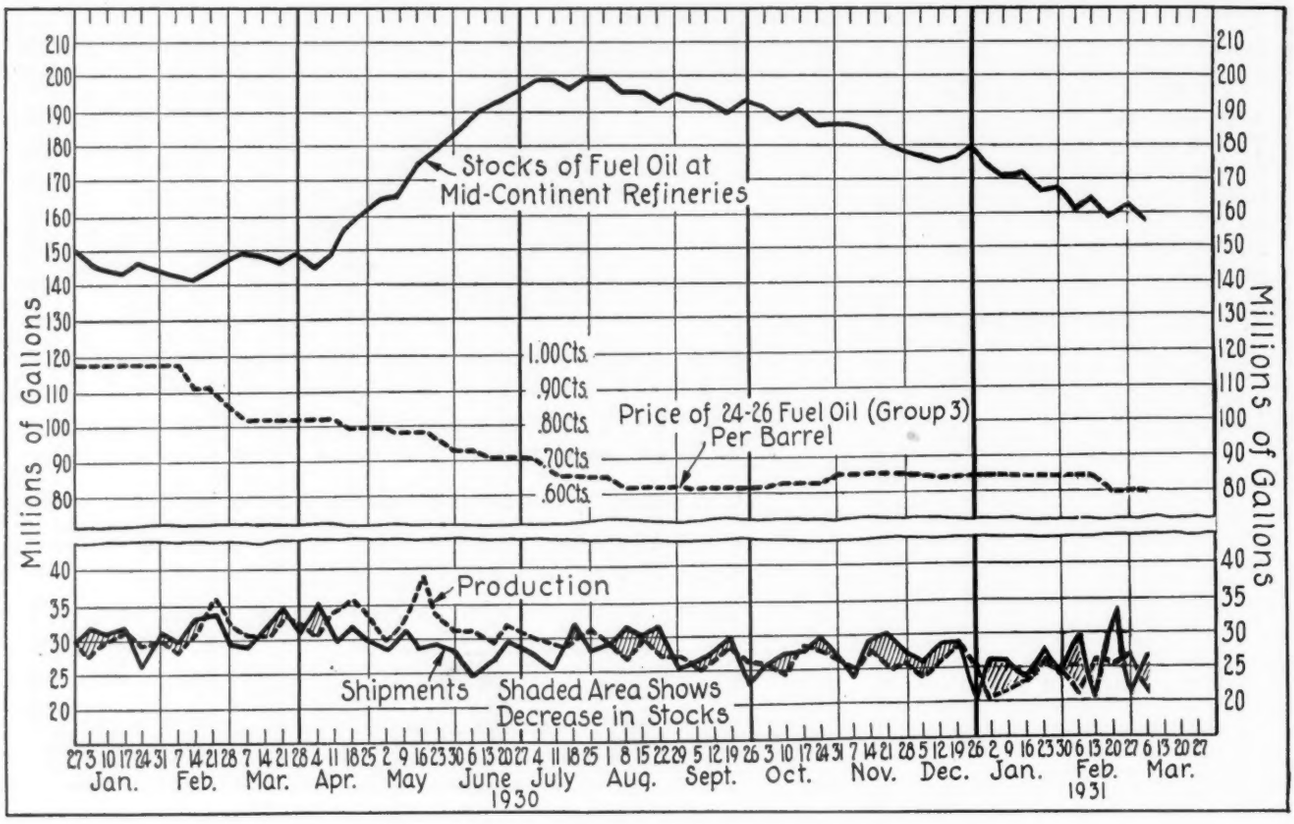
Barometer of Mid-Continent Refinery Market—Week Ending March 6

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News



California Refinery Market

Gasoline Prices Down; Heavy Oils Higher

LOS ANGELES, March 8

ADDITIONAL reductions in tank car, wholesale and retail prices for gasoline were outstanding developments in west coast markets. Standard Oil Co. of California followed its 4-cent reduction in tank wagon prices in southern California of Feb. 28, and a similar cut in Washington and Oregon on March 2, with an additional reduction of 2 cents on March 6 in southern California.

Following the Standard's last reduction, most independent service stations were posting a retail price of 10 cents with major service stations posting 12.50 cents.

While independent gasolines were available in tank car lots at 6 cents, major refiners were asking 7.00 cents generally. These prices were exclusive of tax. For shipment into adjoining states, the range was the same with very little spot business reported.

Lower prices in the east coast gasoline markets caused the withdrawal of buyers previously reported interested in local cargo quotations. Indications were that these buyers would enter into contract for California gasoline at a c.i.f. price of 1 cent under the average New York tank wagon quotations.

However, Pacific coast refiners were reported willing to work out a deal on this basis only if they could be assured of a net back of 5 cents. This was considered doubtful under existing conditions. Dearth of spot gasoline business in the export market was thought likely to result in lower crude schedules within the week, in order that California refiners might compete with Gulf quotations.

The only live business in the offing consisted of an inquiry from a Japanese buyer for two cargoes of 30 gravity crude averaging 30 per cent gasoline content or better. This deal was expected to be closed at 10 to 15 cents per barrel under the posted market.

There was some interest in gas oil for export and a temporary shortage of material caused quotations to advance. Prices ranged from $0.87 per barrel up.

Cracking activities and domestic demand for gas oil also tended to strengthen tank car quotations. One trader reported orders for approximately 12,000 barrels of gas oil, averaging 34-36 gravity, at $0.95 per barrel. Several lots 5000 barrels or better were reported moving between companies at $0.85 to $0.90.

Quotations on domestic fuel oil tank car shipments also advanced with increased demand. The spread was $0.45 to $0.60 with the average at $0.50 to $0.55.

Natural gasoline, which has been quoted at exceptionally low prices during the past three months, failed to go lower when gasoline quotations were reduced. The range of quotations was 5 to 5.75 cents.

Pennsylvania Markets

Neutral Prices Rise 1 to 3 Cents

CLEVELAND, March 9.—Advancing prices for neutral oils continued to outshine all other developments in the western Pennsylvania refinery market the first week in March although a reversal in the trend of bright stock prices was running a close second. The market was virtually featureless as far as other commodities were concerned.

Scarcity of wax distillate was credited with boosting neutral oil prices to the highest levels prevailing since June of last year. With refinery runs greatly curtailed, the production of wax distillate is far from meeting the demands of refiners specializing in lubricating oils.

A broker reported negotiating a wax distillate transaction whereby the purchaser paid 10.25 cents delivered for a fair sized lot. With 30 per cent of the run going to fuel oil he was of the opinion it would be hard for the refiner to break even with 150 No. 3 color neutral priced at a minimum of 17 cents. This was the level 150 No. 3 had attained by the end of the week.

The 200 No. 3 color oil with 420-425 flash rose 3 cents a gallon over the week. Brokers said they had orders in hand to buy sizeable lots at 22 cents a gallon and were unable to locate more than a car or two. With 150 and 200 at 17 cents and 22 cents respectively, prices have advanced 5 to 6 cents a gallon since the first of the year.

The market for bright stock improved considerably. The better demand was coming largely from the large refiners making branded motor oils, the smaller compounders showing only a little more interest in the market. Prices advanced 0.5 cent on the low end of the market and several manufacturers raised their prices 1 to 2 cents a gallon.

Two bright stock manufacturers reported being out of the market for the balance of March and one said he would have none to offer in the open market until May 1. They were quoting nominally high prices although one of them, making 35-40 pour test stock, was offering material for shipment the first week in April at 18 cents, 0.5 cent above the current market.

Demand for gasoline was slow, according to reports of most traders. U. S. Motor remained fairly steady, however, at a minimum of 5.75 cents.

There was a little more activity in kerosine but prices for the 45 and 46 w.w. grades receded 0.125 cent. Fuel oil, cylinder stocks and wax were quiet. Prices generally were unchanged.

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Eastern Domestic Markets

Gasoline Prices Drop 0.5 Cent

Staff Special
NEW YORK, March 7

GENERAL recessions in prices were noted in eastern gasoline markets during the week ended March 7. Of importance was the 0.50-cent reduction in the tank car prices of U. S. Motor gasoline by Standard of New Jersey early in the week which was followed by the Atlantic Refining Co. The Standard Oil Co. of New York announced a 0.50-cent reduction later in the week at all of its terminal points along the seaboard. The tank car market at New York harbor became increasingly soft as the week progressed. While a fair number of sales were closed at 7 cents, by far the majority of sales were made at 6.75 cents. Before the week ended there were inroads made on the 6.75-cent market by occasional sales at 6.50 cents. A noticeable loss of business was reported by sellers who quoted 6.75 cents, and a disposition to meet a lower figure was indicated. A few barge sales were reported at 6.75 cents and one at 7 cents. Generally speaking demand for regular U. S. Motor was not up to expectations, some jobbers in the immediate vicinity of New York being well stocked with gasoline purchased in February.

Of interest to the New York trade was an offer early in the week of two cargoes of Roumanian 64-66, 375 end point gasoline at 5.50 cents c.i.f. New York harbor. While complete specifications of this gasoline were lacking, New York marketers were watching this new cloud upon the market with considerable interest.

In the Philadelphia market increased buying was quoted in some quarters. The price generally quoted was 7 cents and that figure was rarely shaded. In one instance a good sized order for shipment to Ohio was taken on the basis of the prevailing 7-cent price in Philadelphia. In the Baltimore market the majority of sales were made at 6.75 cents although occasional orders were taken at 7 cents. A disposition to shade the lower figure was indicated the last few days, but sizeable sales under 6.75 cents had not been reported as the week ended.

California gasoline failed to get a premium in any of the three markets. No spot sales of the west coast material were reported at New York harbor. A considerable amount of this gasoline moved at 7 cents in Philadelphia market. However, in the latter instance, California gasoline has been sold in a blended form at a lower price. In Baltimore the California material was offered at the same price as regular U. S. Motor.

Little activity was noted in the New England markets. While gasoline shipments under contract were up to expectations, no spot sales were reported. Demand for heating oils was lighter in Boston and New York. Prices in both markets remained unchanged at 4.50 cents and 5.50 cents for the first and second grades, respectively.

Prices for Grade C Bunker oil remained unchanged at $1.05 per barrel at both New York and Boston. Diesel oil was quoted at $1.85 per barrel at New York harbor.

Move White Oak Offices

TULSA, March 7.—Headquarters for the White Oak Refining Co. were removed March 6 to Oklahoma City, according to an announcement by Victor H. Smith, president. The company operates a refinery at Allen, Okla., and one at Oklahoma City and has two plants in Texas. The company also has terminal facilities on the Gulf Coast.

Gulf Lubes Quiet

HOUSTON, March 7.—Manufacturers reported no changes in market prices on sales of Gulf Coastal lubricant grades over the week. Quiet conditions prevailed.

Gulf Coast Markets

Distress Gasoline Sends Prices Down

Staff Special
NEW YORK, March 7

BULK markets at the Gulf showed indications of easing when sellers reported several distress cargoes of U. S. Motor gasoline on hand. While no foreign inquiries were in the market sellers were of the opinion that lower prices might stimulate business. In the light of lower prices in the Mid-Continent it was believed in some quarters that prices prevailing recently for all grades of gasoline in cargo lots at the gulf could be shaded an 0.125-cent to a 0.25-cent on firm bid.

Indications of prices from suppliers late the past week were as follows: U. S. Motor, 5 cents; 60-62, 400 end point, 5.375 cents; 61-63, 390 end point, 5.625 cents; 64-66, 375 end point, 5.875 cents. The prices for kerosines remained fairly firm at 4.25 and 5.25 cents, respectively for prime white and water white. The market for cased goods was generally quiet with the exception of orders received by one seller for a small lot of kerosine in cases for shipment to India.

Grade C bunker oil in cargo lots continued available at $0.65 per barrel in a quiet market.

Venezuela Crude

The market for Venezuela crude ended another quiet week. No sales were reported. The price for this material based on the last sales made remained at $0.76 per barrel, f.o.b. deepwater in the Lake Maracaibo region.

Panuco Crude

The market for Panuco crude was without inquiry or sales. This oil was available at $0.50 per barrel, f.o.b. Tampico.

Wax Markets

Scale Active; Prices Steady

NEW YORK, March 7.—The New York wax market on signs of old time activity when a shortage of scale wax developed in the New Orleans market.

One seller in the New York market reported receiving orders totalling approximately 500 tons of this grade for shipment to the United Kingdom and the Continent over the next two months. The shortage at New Orleans came as somewhat of a surprise but suppliers in that market explained that domestic buying had been resumed and stocks had been drawn upon considerably. One New York seller received inquiries for approximately 800 tons of scale wax.

Waxes with the higher melting points did not share in the improved demand. The inquiry circulated by the Spanish Monopoly has not at this writing developed into actual business.

Prices for all grades of wax in both the New York and New Orleans markets remained generally unchanged.

N.P.N. Service Record

Some of the requests for information, data and advice, which were taken care of in various National Petroleum News offices in the past week are:

Representative of cracking process licensor called at Houston office for refinery data.

* * *

Shreveport drilling contractor, Houston oil lease man and another Houston man, stopped at Houston office to discuss East Texas producing situation.

* * *

Secretary of Nebraska oil jobber given what information is available on two process for manufacturing motor oils.

* * *

Personnel manager of large eastern oil company referred to source for a brief, non-technical resume of the oil industry, including data on the origin of oil, production and marketing problems.

* * *

Owner of Connecticut oil jobbing company, who inquired regarding practice of oil companies against mistakes in delivery, furnished with further data obtained by N.P.N. from legal departments of various oil marketing companies, including insurance policies that may be obtained to cover such mistakes.

* * *

A better Business Bureau furnished monthly gasoline consumption figures by states.

* * *

New York inquirer told about gasoline and fuel oil consumption in a New York county.

* * *

Association of exporters told about general oil market conditions.

* * *

Oil Supply company engineers called at Houston office for extra copies of articles on Diesel engines published in N.P.N. and the new International Petroleum Technology.

* * *

Fort Worth oil operator given data on Powell field discovery date.

* * *

Arizona inquirer supplied information on oil promotion enterprise.

* * *

Washington state oil broker supplied information on Independent refiners in Venezuela.

* * *

German oil importer furnished names and address of seven refiners of Pennsylvania neutral oils of specifications he mentioned, told of differences between flash points as determined by Cleveland open cup test and by Marcusson method, and told of reason for differences in specific gravities of Pennsylvania cylinder stocks and what the important factors are in determining a good lubricating oil.

* * *

Manager of Michigan oil jobber furnished names and addresses of nine refiners of white mineral oil.

* * *

New York oil producer-refiner-marketer sent list of all active oil associations, such as published on page 202 of N.P.N. March 4 issue.

* * *

President of Connecticut oil jobbing company referred to list of liquefied petroleum gas distributors published in July 9, 1930 issue of N.P.N, page 72; also referred to U. S. Bureau of Mines, Washington, for list and additional information.

One-Stops

How goods are sold at one-stops—design and layout of modern super service stations—how they are operated—what services are offered—

These new oil marketing problems have been discussed in 50 articles in the past 16 months' issues of National Petroleum News.

Here are references to these 50 articles which you may clip for your files:

1931

How a one-stop adds a new department — Feb. 25, p. 74

Southern automotive servicing goes one-stop — Feb. 18, p. 79

Canadian one-stop increases sales 15% — Feb. 11, p. 91

Sells oil filters at Michigan one-stop — Feb. 11, p. 95

Standard of New Jersey has elaborate one-stop near U. S. capital — Feb. 4, p. 95

Ready-built super station at Little Rock — Feb. 4, p. 38

Manager can view all operations from super station window; layout and plan — Jan. 28, p. 71

Commissions in selling — Jan. 28, p. 78

One-stop service attracts small fleet operators — Jan. 28, p. 75

Sells auto heaters by selling one to himself first — Jan. 28, p. 75

Things to consider in laying out one-stop — Jan. 14, p. 78

1930

One-stop series:
2 to 5% of stations used for merchandising tests, Dec. 17, p. 35; Pump islands and show windows, Dec. 24, p. 59; Commissions for accessory sales, Dec. 31, p. 62; Merchandising set-up tends toward key service station, Jan. 7, 1931, p. 91.

One-stop service and merchandising — Dec. 17, p. 35

Tires outsell gasoline at one-stop — Dec. 3, p. 27

Points to consider in building one-stops — Nov. 12, p. 217

Tire company one-stops enter Kemper plan; coupon books — Oct. 1, p. 23

Merchandising side lines at stations increases gasoline sales — Oct. 1, p. 83

One-stop servicing is function for oil industry — Sept. 17, p. 67

Sinclair's one-stop is latest and biggest — Aug. 20, p. 77

Tire company one-stops in Findlay, O. price war — July 30, p. 85

One-stops sell advertised brands easiest — July 9, p. 81

England's wayside garages transformed into one-stops — June 18, p. 91

Firestone's two Providence one-stops sell 600,000 gallons a year — June 4, p. 107

Super service means super personnel — May 21, p. 107

Firestone not to enter wholesale gasoline business — May 14, p. 27

How other stations feed business to one-stops — May 7, p. 38

Retreading tires, special polish jobs, bring profit to super station — May 7, p. 90

Major companies become converts to one-stops — April 16, p. 37

Development of the service station — April 16, p. 98

One-stop repairs all makes of autos — April 16, p. 101

Super service station is dedicated to women — April 9, p. 89

Cuts and descriptions of 19 modern super stations — March 19, p. 103-136

Unified management of one-stops is paramount need — March 19, p. 176

How Pierce developed stations into motorist hotels — March 19, p. 153

Firestone advertising one-stops nationally — Feb. 26, p. 90

Importance of station personnel and appearance — Feb. 19, p. 21

Basement storage planned by Firestone Tire — Feb. 12, p. 29

How outposts get business for one-stops — Feb. 5, p. 91

Bargain basement attracts customers to one-stop — Feb. 5, p. 36

Service of one department pushed by Canadian one-stops — Jan. 22, p. 83

1929

Attendants should know regular patrons' needs — Dec. 18, p. 29

Uniforms for station attendants — Dec. 11, p. 100

Pittsburgh one-stops have broader merchandising — Dec. 4, p. 99

Tire dealers to develop one-stops individually — Nov. 20, p. 29

Seiberling says tire retailing not rosy — Nov. 20, p. 30

22 greasing jobs done daily at small town super station — Nov. 13, p. 24

Servicing cars in club atmosphere at super station — Nov. 13, p. 77

Back copies of any of the above issues are 25c a copy. On issues that are exhausted, photostats will be furnished at 40c per page.

Libraries in the larger cities generally keep back files of National Petroleum News complete.

National Petroleum News

Main Office: 1213 West Third Street — ***Cleveland, Ohio***

Complete Seaboard Market

(Export Markets for whole year given in OIL HANDBOOK. Each volume carries refinery, tank wagon, crude and export markets—complete for the whole year)

Eastern Domestic Market

(Prices for tank car lots, f. o. b. refinery or seaboard terminal, representing majority of sales and quotations. Prices shown below do not include inspection tax levied in some states.)

U. S. MOTOR GASOLINE	Prices March 9	Prices March 2	Prices Feb. 23
New York harbor	6.75 – 7.00	6.75 – 7.00	7.00
Portland district	7.75 – 8.00	7.75 – 8.00	*8.00 – 8.25
Boston district	*7.40 – 7.50	*7.40 – 7.50	*7.90 – 8.00
Providence district	*8.25 – 8.50	*8.25 – 8.75	*8.25 – 8.75
Philadelphia district	7.00	7.00 – 7.50	7.50
Baltimore district	6.75 – 7.00	6.75 – 7.00	7.50
Norfolk district	7.00	7.00 – 7.50	7.50
Charleston district	7.00	7.00 – 7.50	7.50
Savannah district	7.00	7.00 – 7.50	7.50
Jacksonville district	7.00	7.00 – 7.50	7.50
CALIFORNIA, U. S. MOTOR GASOLINE			
New York harbor	6.75 – 7.00	†7.00	†7.00
Philadelphia district	7.00	7.00	†7.00
Baltimore district	6.75 – 7.00	7.00	7.00 – 7.25
‡DOMESTIC AVIATION GASOLINE			
New York harbor	10.00 –13.00	10.00 –13.00	10.00 –13.00
Philadelphia	10.00 –12.00	10:00 –12.00	10.00 –12.00
Baltimore	11.00 –13.00	11.00 –13.00	11.00 –13.00
Boston	11.50 –13.00	11.50 –13.00	11.50 –13.00

‡Prices are based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167°F. and not less than 122°F.; 50% recovery at 221°; 90% at 311°; 96% at 347° end point 374°F. Gasoline of fighting grade specifications in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

WATER WHITE KEROSINE			
New York harbor	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50
Philadelphia district	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50
Baltimore district	6.50	6.50	6.50
GAS OIL: 28-34 Gravity			
New York harbor	4.50	4.50	4.50
Boston district	4.50	4.50	4.50
FURNACE OIL: 36-40 Gravity			
New York harbor	5.50	5.50	5.50
Boston district	5.50	5.50	5.50
GRADE C BUNKER OIL (Lighterage 5c per bbl. additional)			
New York harbor	$1.05	$1.05	$1.05
Boston district	$1.05	$1.05	$1.05
DIESEL OIL			
New York harbor	$1.85	$1.85	$1.85

†Nominal. *Delivered prices.

New York Export Market

(Lubricating oils are per gal. in bbls. F.a.s. New York)

	March 9	March 2	Feb. 23
CYLINDER OILS (Pennsylvania Products)			
Bright stock, No. 8 color	23.50 –25.00	24.00 –26.00	24.00 –26.00
Bright stock, No. 6½ color diluted	22.50 –24.00	23.00 –25.00	23.00 –25.00
600 D filtered	22.50 –25.00	22.50 –25.00	22.50 –25.00
600 Warren E filtered	18.00 –21.00	19.00 –22.00	19.00 –22.00
600 stm. refd. unfiltered	14.50 –16.00	15.00 –17.00	15.00 –17.00
650 stm. refd. unfiltered	18.00 –20.00	18.00 –20.00	18.00 –20.00
600 flash steam refined	18.50 –20.00	18.50 –21.00	18.50 –21.00
630 flash, steam refined	24.00 –26.00	25.00 –28.00	25.00 –28.00
RED PARAFFIN OILS (Vis. 100°)			
300 vis. No. 6½ color	17.00 –20.00	17.00 –20.00	17.00 –20.00
250 vis. No. 6 color	16.50 –17.50	16.50 –17.50	16.50 –17.50
200 vis. No. 6 color	14.75 –17.00	14.75 –17.00	14.75 –17.00
PALE PARAFFIN OILS (Vis. 100°)			
230 vis. No. 3¾ color	21.50	21.50	21.50
180 vis. No. 3¼ color	18.00 –20.00	18.00 –20.00	18.00 –20.00
100 vis. No. 2¼ color	12.50 –15.00	12.50 –15.00	12.50 –15.00
MOTOR OILS (Vis. 100°)			
600 vis. No. 7 color	28.00 –30.00	28.00 –30.00	28.00 –30.00
500 vis. No. 6½ color	26.50 –29.50	26.50 –29.50	26.50 –29.50
400 vis. No. 7¼ color	25.00 –28.00	25.00 –28.00	25.00 –28.00
300 vis. No. 6 color	22.00 –26.00	22.00 –26.00	22.00 –26.00
200 vis. No. 6 color	21.00 –23.50	21.00 –23.50	21.00 –23.50

Wax Market

(Melting points are A.M.P. method. Prices in cents per pound, f.a.s. carload lots.)

NEW YORK	March 9	March 2	Feb. 23
124-126 Yellow crude scale	2.25	2.25	2.25
122-124 White crude scale	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375
124-126 White crude scale	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375
123-125 Fully refined	3.25	3.25	3.25
125-127 Fully refined	3.375– 3.50	3.375– 3.50	3.375– 3.50
128-130 Fully refined	3.625– 3.75	3.625– 3.75	3.625– 3.75
130-132 Fully refined	3.625– 3.875	3.625– 3.875	3.625– 3.875
133-135 Fully refined	4.375– 4.50	4.375– 4.50	4.375– 4.50
135-137 Fully refined	4.625– 4.75	4.625– 4.75	4.625– 4.75
NEW ORLEANS			
124-126 Yellow crude scale	2.25	2.25	2.25
122-124 White crude scale	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375
124-126 White crude scale	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375
123-125 Fully refined	3.25	3.25	3.25
125-127 Fully refined	3.375– 3.50	3.375– 3.50	3.375– 3.50
128-130 Fully refined	3.50 – 3.75	3.50 – 3.75	3.50 – 3.75
130-132 Fully refined	3.50 – 3.625	3.50 – 3.625	3.50 – 3.625
133-135 Fully refined	4.375	4.375	4.375

Gulf Coast Bulk Market

(Prices are f. o. b. Gulf oil terminals representing sellers' opinions covering bulk shipments of 20,000 barrels or more, for export and / or coastwise shipment unless otherwise noted.)

GASOLINE	Prices March 9	Prices March 2	Prices Feb. 23
U. S. Motor	5.00 – 5.125	5.125– 5.25	5.125– 5.25
60-62, 400 e.p.	5.375– 5.50	5.50 – 5.625	5.50 – 5.625
61-63, 390 e.p.	5.625– 5.75	5.75 – 5.875	5.75 – 5.875
64-66, 375 e.p.	5.875– 6.00	6.00 – 6.25	6.00 – 6.25
U. S. Motor, cases (cargoes)	$1.60	$1.60	$1.60
64-66, cases (cargoes)	$1.70 –$1.72	$1.70 –$1.72	$1.70 –$1.72
KEROSINE			
44 water white	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50
41-43 prime white	4.25 – 4.50	4.25 – 4.50	4.25 – 4.50
Water white, cases (cargoes)	$1.40	$1.40	$1.40
Prime white, cases (cargoes)	$1.30	$1.30	$1.30
GAS & BUNKER OILS			
*26-30 translucent gas oil	3.00 – 3.125	3.00 – 3.125	3.00 – 3.125
*30 plus translucent gas oil	3.00 – 3.125	3.00 – 3.125	3.00 – 3.125
Grade C bunker oil, for ships' bunkers, per bbl.	$0.90	$0.90	$0.90
Grade C bunker oil, per bbl. in cargoes	$0.65	$0.65	$0.65

*Less than ½ of 1% sulphur.
†Represents sales only.

MEXICAN CRUDE AND BUNKER OILS (f. o. b. Steamer, Tampico)			
Heavy Panuco crude taxes to be paid, per bbl.	$0.50 –$0.52	$0.50 –$0.52	$0.50 –$0.52
Grade C bunker oil for bunkering, taxes paid, per bbl.	$0.90	$0.90	$0.90
VENEZUELA CRUDE			
F. o. b. deepwater, Lake Maracaibo region	$0.76	$0.76	$0.76

SOUTH TEXAS LUBRICATING OILS (Viscosity at 100°F. cold test 0 Tanker, f. o. b. Gulf oil terminals.)

100 vis. No. 2 unfiltered pale	4.75 – 5.75	4.75 – 5.75	4.75 – 5.75
200 vis. No. 3 unfiltered pale	6.75 – 8.25	6.75 – 8.25	6.75 – 8.25
300 vis. No. 3 unfiltered pale	7.75 – 9.50	7.75 – 9.50	7.75 – 9.50
500 vis. No. 3½ unfiltered pale	8.75 –10.50	8.75 –10.50	8.75 –10.50
750 vis. No. 4 unfiltered pale	10.25 –12.75	10.25 –12.75	10.25 –12.75
1200 vis. No. 4 unfiltered pale	14.00 –16.00	14.00 –16.00	14.00 –16.00
200 vis. No. 5-6 red oil	6.00 – 6.75	6.00 – 6.75	6.00 – 6.75
300 vis. No. 5-6 red oil	7.00 – 7.75	7.00 – 7.75	7.00 – 7.75
500 vis. No. 5-6 red oil	8.00 – 9.00	8.00 – 9.00	8.00 – 9.00
750 vis. No. 5-6 red oil	9.25 –11.50	9.25 –11.50	9.25 –11.50
1200 vis. No. 5-6 red oil	13.00 –15.00	13.00 –15.00	13.00 –15.00

Pacific Export Market

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

	March 9	March 2	Feb. 23
Gasoline, U. S. Motor, 53-55 Gravity	5.00	5.00	5.00
Gasoline, U. S. Motor-blends and special cuts	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50
Gasoline, 400 e.p. blend	5.50 – 6.00	5.50 – 6.00	5.50 – 6.00
Gas Oil, 30-34 per bbl.	$0.90 –$0.95	$0.90 –$0.95	$0.90 –$0.95
Diesel Oil, 27 plus, per bbl.	$0.85 –$0.90	$0.85 –$0.90	$0.85 –$0.90
Bunker oil, 14-18 per bbl.	$0.64 –$0.85	$0.64 –$0.85	$0.64 –$0.85
Fuel oil, 14-18 per bbl.	$0.60 –$0.95	$0.60 –$0.95	$0.60 –$0.95
Kerosine, 38-40 w.w., 125-150 flash, per gal.	5.00 – 6.00	5.00 – 6.00	5.00 – 6.00
Cased Goods			
Gasoline, U. S. Motor	$1.75 –$1.85	$1.75 –$1.85	$1.75 –$1.85
Gasoline, 400 e.p. blend	$1.85 –$2.00	$1.85 –$2.00	$1.85 –$2.00
Kerosine, 38-40 w.w., 125-150 flash	$1.45 –$1.50	$1.45 –$1.50	$1.45 –$1.50

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 pounds, British sterling; to American ports, cents per barrel.)

	March 9	
	Crude &/or Fuel	Refined Oil &/or Spirits
Calif. to U. K. or Continental ports*	21	18
Gulf to U. K. or Continental ports*	10-11	†10
North Atlantic to U. K. or Continental ports*	9/6	†8/6
Calif. to North Atlantic ports (not E. of N. Y.)	$0.45-$0.50	$0.45-$0.50
Gulf to North Atlantic ports (not E. of N. Y.)**	14-15	15

*Continental ports in the range between Bordeaux and Hamburg, both inclusive. **Venezuela loading same rate, for Tampico 2c to 3c per bbl. additional. †Two ports discharged.

REO Fulfills Every Need of Reliable Oil and Gas Haulage

The Reo is the fastest and most easily driven of full-sized commercial vehicles having all-truck design and construction. ¶ Reo records of low-cost, long-life operation have never been disputed. ¶ Reo power and ruggedness, Reo safety and control, Reo riding comfort and saving of driver fatigue — are advantages operators seek and appreciate. ¶ Moreover, Reo-designed bodies are perfectly suited to reliable oil and gas haulage needs and possess the advertising asset of fine appearance.

REO MOTOR CAR COMPANY, LANSING, MICHIGAN

SPEED WAGONS REO AND TRUCKS

Tank Wagon, Service Station Markets for Gasoline and Kerosine

(OIL PRICE HANDBOOK has t.w. and s.s. markets for a whole year, arranged for quick reference)

These Prices in Effect March 9, 1931, as Posted by Principal Marketing Companies

Latest Changes in Tank Wagon Prices

Gasoline

Atlantic Refining—Correction: t. w. and s. s. prices published in the tank wagon table, page 228, March 4 issue, for New England were incorrect. Those prices should have indicated a general cut of 1c in tank wagon prices only, over those published in Feb. 25 issue. Prices shown in the table in this issue for Boston, Springfield, Worcester, Hartford and Providence were effective **Feb. 25**; for Fall river, **March 5.**

S. O. Kentucky—T. w. cut 1c, s. s. cut 3c, Jackson, Miss., both to 17c including 5c tax, **Feb. 28.**

S. s. only cut 2c, Pensacola, to 20c, **March 1.**

S. O. Ohio—T. w. and s. s. up 1c, thru Ohio, to statewide prices of 16c and 17c respectively, including 4c tax, **March 5.**

S. s. only cut 1c thru Defiance, Hancock and Marion counties, to 16c, including 4c tax, **March 8.**

S. O. Indiana—T. w. and s. s. cut 2c, generally thru territory, **March 5.** Exceptions: T. w. and s. s. unchanged at Chicago, E. St. Louis, Indianapolis and St. Louis; s. s. only unchanged at Detroit and Wichita; t. w. cut 2.9c, s. s. cut 1c, Fargo; S. s. cut 1/10c, Kansas City and 2/10c, Huron.

S. O. Nebraska—T. w. and s. s. cut 2c, generally thru Nebraska, **March 5.** Exceptions: T. w. cut 1.5c, Norfolk; s. s. cut 1c, Omaha; unchanged at Norfolk. T. w. and s. s. unchanged at Scottsbluff.

S. O. Louisiana—T. w. and s. s. up 2c, New Orleans, to 18.5c and 19.5c respectively, including 6c tax, **March 3.**

Continental Oil—T. w. and s. s. cut 2c, generally thru Wyoming and Montana, **March 6.** Exceptions: Butte and Helena, Mont., unchanged.

T. w. and s. s. cut 1c, generally thru Colorado, Utah and Idaho, **March 7.** Exceptions: Denver, Pueblo and Grand Junction unchanged.

S. O. California—Posted wholesale price cut 2c, San Francisco and Fresno, Cal., both to 19c, including 3c tax, **Feb. 28.**

Posted wholesale price up 2c, retail price up 4c, Los Angeles, both to 18.5c, including 3c tax, **Feb. 28.**

Wholesale and retail prices cut 4c, Los Angeles, both to 14.5c, including 3c state tax; both prices cut 4c, Seattle and Tacoma, both to 17.5c, including 3c tax; and both cut 2c, Portland, making both wholesale and retail prices 20.5c, including 4c tax, all effective **March 6.**

Kerosine

S. O. Ohio—Kerosine up 1c, thru Ohio, to 13c t. w., **March 5.**

S. O. Indiana—Kerosine cut 2c, generally thru territory, **March 5.**

S. O. Nebraska—Kerosine cut 2c, generally thru Nebraska, **March 5.**

Continental Oil—Kerosine cut 1.5c, Pueblo, to 12c t. w., **March 2.**

Kerosine cut 2c, generally thru Montana and Wyoming, **March 6.**

Kerosine cut 1c, generally thru Colorado, Utah and Idaho, **March 7.** Exceptions: Denver, cut 1c; Grand Junction, 2.5c; Pueblo unchanged.

Aviation Gasoline

S. O. Indiana—T. w. cut 2c, generally thru territory, **March 5.**

V. M. & P. Naphtha

S. O. Indiana—Prices of oleum spirits, v. m. and p. and cleaners' naphtha, cut 2c, thru territory, **March 5.**

S.O.NEW JERSEY TERRITORY

	T.W.	Tax	Gasoline Total T.W.	S.S.	Oil T.W.
Atlantic City, N. J.	11.5	3	14.5	16.5	11.5
Newark, N. J.	10.5	3	13.5	15.5	10.5
Annapolis, Md.	12	4	16	17	11
Baltimore, Md.	11.2	4	15.2	16.2	9.5
Cumberland, Md.	13	4	17	18	12
Washington, D. C.	11.7	2	13.7	14.7	10.7
Danville, Va.	12.8	5	17.8	18.8	11.8
Norfolk, Va.	11.3	5	16.3	17.3	10
Richmond, Va.	11.7	5	16.7	17.7	10.7
Roanoke, Va.	13	5	18	18	12
Petersburg, Va.	12.3	5	17.3	18.3	11.3
Charleston, W. Va.	12.5	4	16.5	17.5	11.5
Keyser, W. Va.	13.1	4	17.1	18.1	12.1
Parkersburg, W. Va.	11.2	4	15.2	16.2	10.2
Wheeling, W. Va.	12.4	4	16.4	17.4	11.4
Raleigh, N. C.	13.2	5	18.2	19.2	12.2
Charlotte, N. C.	13.3	5	18.3	19.3	12.3
Hickory, N. C.	13.6	5	18.6	19.6	12.6
Mt. Airy, N. C.	13.5	5	18.5	19.5	12.5
Salisbury, N. C.	13.5	5	18.5	19.5	12.5
Charleston, S. C.	11.3	6	17.3	18.3	10.3
Columbia, S. C.	13.2	6	19.2	20.2	12.2

Note: 2c per gallon discount off retail t.w. price of gasoline to dealers only thru S. O. New Jersey territory, except Maryland and Washington, D. C. where discount is 3c.

S. O. NEW YORK

Greater New York City:					
Boroughs of Manhattan, Bronx, Queens & Kings	11.3	2	13.3	15.3	10
Borough of Richmond	11.7	2	13.7	15.7	12
Albany, N. Y.	12.6	2	14.6	16.6	9.5
Buffalo, N. Y.	11.8	2	13.8	15.8	9
Rochester, N. Y.	12	2	14	16	9
Syracuse, N. Y.	12.8	2	14.8	16.8	9.5
Boston, Mass.	11.5	2	13.5	15.5	10
Augusta, Me.	12.8	4	16.8	18.8	12.8
Manchester, N. H.	12.4	4	16.4	18.1	10
Burlington, Vt.	13.3	4	17.3	19.3	10
New Haven, Conn.	12.6	2	14.6	16.6	12.6
Providence, R. I.	11.7	2	13.7	15.7	10

Discounts on gasoline: 2c per gal. off posted t. w. price to dealers, thru territory, except 3c to dealers in New York City, effective Feb. 20, 1931.

ATLANTIC REFINING

Pittsburgh, Pa.	14	*	14	19	12
Philadelphia, Pa.	14	*	14	19	12
Allentown, Pa.	14	*	14	19	12
Erie, Pa.	14	*	14	19	11
Scranton, Pa.	14	*	14	19	12
Altoona, Pa.	14	*	14	19	12
Dover, Del.	14	3	17	19	12
Wilmington, Del.	14	3	17	19	12
Boston, Mass.	11.5	2	13.5	15.5	10
Springfield, Mass.	12.5	2	14.5	16.5	10
Worcester, Mass.	12.3	2	14.3	16.3	10
Fall River, Mass.	12.1	2	14.1	15.1	10
Providence, R. I.	11.7	2	13.7	15.7	10
Hartford, Conn.	12.5	2	14.5	16.5	10
New Haven, Conn.	12.6	2	14.6	16.6	10
Atlantic City, N. J.	11.5	3	14.5	16.5	11.5
Camden, N. J.	10.6	3	13.6	15.6	10.6
Trenton, N. J.	11	3	14	16	11
Annapolis, Md.	12	4	16	17	11
Baltimore, Md.	11.2	4	15.2	16.2	9.5
Hagerstown, Md.	12.7	4	16.7	17.7	11.7
Richmond, Va.	11.7	5	16.7	17.7	10.7
Wilmington, N. C.	11.4	5	16.4	17.4	12.4
Brunswick, Ga.	13	6	19	21	**15
Jacksonville, Fla.	13	6	19	21	14

Note: 2c per gal. discount off t.w. price of gasoline on sales to dealers; discount to commercial accounts under contract for one year in accordance with Code of Ethics. Erie has dealer discount of 3c off t.w. price, effective Nov. 6.

*3-cent state tax is collected by retail dealer and paid by him directly to state.

**Georgia kerosine prices include 1c state tax.

Above prices include these inspection fees on both gasoline and kerosine, per gallon: Alabama, 1/40c on gasoline, 1/2c kerosine; Arkansas, 1/20c on both; Florida, 1/8c on both; Illino's, 3/100c on both; Indiana, 2/25c to 1/2c on both; Kansas, 3/50c on both; Louisiana, 1/32c on gasoline; Minnesota, 3/50c on both; Missouri, 1/50c to 1/2c on both; Nebraska 3/100c on both; North Carolina, 1/4c on both; North Dakota, 1/20c on both; Oklahoma, 4/25c on both; South Carolina, 1/8c on both; South Dakota, 1/10c on both; Tennessee, 2/5c on gasoline and 1/2c to 4/5c on kerosine; Wisconsin, 1/25c on both.
Kerosine inspection fees only, per gallon; Iowa 7/100c; Michigan, 1/5c to 4/5c per gal.

Tank Wagon, Service Station Markets for Gasoline and Kerosine

These Prices in Effect March 9, 1931, as Posted by Principal Marketing Companies

S. O. KENTUCKY

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
Ashland, Ky.	12	5	17	19	13
Lexington, Ky.	12	5	17	18	13.5
Louisville, Ky.	11	5	16	17	11
Bowling Green, Ky.	14	5	19	21	14.5
Corbin, Ky.	13	5	18	19	15
Paducah, Ky.	12	5	17	19	12
Covington, Ky.	11	5	16	17	13.5
Clarksdale, Miss.	13	5	18	20	13.5
Gulfport, Miss.††	11	5	16	16	13.5
Jackson Miss.	12	5	17	17	13.5
Natchez, Miss.	13	5	18	20	13.5
Vicksburg, Miss.	13	5	18	18	13.5
Birmingham, Ala‡‡	15	4	19	21	15
Mobile, Ala‡	15	4	19	21	15
Montgomery, Ala.*	15	4	19	21	15.5
Atlanta, Ga.	14	6	20	22	†13.5
Augusta, Ga.	14	6	20	22	†15.5
Macon, Ga.	14	6	20	22	†13
Savannah, Ga.	14	6	20	20	†14
Jacksonville, Fla.	13	6	19	21	14
Miami, Fla.	14	6	20	22	15
Tampa, Fla.	13	6	19	21	14
Pensacola, Fla.**	14	6	20	20	15

Note: Net price of gasoline to dealers is 2c under posted t.w. price thru S. O. Kentucky territory.

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosine at Montgomery included.

†Georgia kerosine prices include 1c state tax.

**Both tank wagon prices include 1c city tax at Pensacola which went into effect Oct. 15, 1926.

††Both tank wagon prices at Gulfport include Harrison county privilege tax of 2c.

‡Mobile gasoline prices include 1c city tax.

‡‡Birmingham gasoline prices include 1c city tax.

S. O. OHIO

Ohio statewide	12	4	16	17	13
Defiance, Hancock and Marion counties	12	4	16	16	13

Note: Discount on gasoline to dealers and commercial consumers generally thru Ohio is 2c per gal. off above t.w. prices.

Discount on kerosine to dealers and commercial consumers is 3c per gal. off t.w. price thru Ohio.

S. O. INDIANA

Chicago, Ill.	11	3	14	15	9
Decatur, Ill.	11.4	3	14.4	15.4	9
E. St. Louis, Ill.	10.7	3	13.7	14.7	8.2
Joliet, Ill.	11.4	3	14.4	15.4	9
Peoria, Ill.	11.4	3	14.4	15.4	9
Quincy, Ill.	11.2	3	14.2	15.2	8.8
Springfield, Ill.	11.4	3	14.4	15.4	9
Indianapolis, Ind.	10.9	4	14.9	15.9	10.1
Evansville, Ind.	11.1	4	15.1	16.1	9.9
South Bend, Ind.	11.4	4	15.4	16.4	10.2
Detroit, Mich.	11.8	3	14.8	15.8	10.7
Grand Rapids, Mich.	11.7	3	14.7	15.7	10.6
Saginaw, Michigan	11.9	3	14.9	15.9	10.8
Green Bay, Wisc.	11.6	2	13.6	14.6	9.4
Madison, Wisc.	11.3	2	13.3	14.3	9.1
Milwaukee, Wisc.	11.1	2	13.1	14.1	8.9
La Crosse, Wisc.	12.2	2	14.2	15.2	10
Minneapolis, Minn.	12.2	3	15.2	16.2	9.9
Duluth, Minn.	12.5	3	15.5	16.5	9.9
Mankato, Minn.	12.1	3	15.1	16.1	9.7
Des Moines, Ia.	11.5	3	14.5	15.5	9.3
Davenport, Ia.	11.5	3	14.5	15.5	9.3
Sioux City, Ia.	11.1	3	14.1	15.1	8.9
Mason City, Ia.	11.5	3	14.5	15.5	9.3
St. Louis, Mo.	*10.9	2	12.9	13.9	8.3
Kansas City, Mo.	†11.9	2	13.9	14.9	7.6
St. Joseph, Mo.	†11.5	2	13.5	14.5	8.1
Fargo, N. D.	13	3	16	16	11.9
Grand Forks, N. D.	14.2	3	17.2	18.2	12.2
Minot, N. D.	13.9	3	16.9	17.9	11.9
Pierre, S. D.	12	4	16	17	10.4
Huron, S. D.	12.3	4	16.3	17.3	10.7
Wichita, Kans.	9.8	3	12.8	13.8	7.8
Bartlesville, Okla.	9.5	4	13.5	16.5	7.5

S. O. Indiana's quantity contract price schedule thru territory (except in Chicago, which see below) on tank truck deliveries of gasoline, figured from the service station price is 3c for 500 gals. or more a month; and 4½c for 75,000 gals. or more a month.

In Chicago and vicinity, these discounts apply: Over 500 gals. per month, 2c per gal. off service station price; over 1000 gals. per month 4c per gal. off service station price.

*Includes city tax of ½c.

†Includes city tax of 1c.

S. O. NEBRASKA

Omaha, Neb.	11.25	4	15.25	17.25	9.25
McCook	12.75	4	16.75	18.75	10.75
Norfolk	11.75	4	15.75	17.25	9.75
North Platte	12.75	4	16.75	18.75	10.5
Scottsbluff	12	4	16	16	10.25

Note: Discounts: 1c per gal. off tank wagon price of gasoline for 1,000 gallon dumps per month to consumers taking tank wagon delivery only discount applying only at normal points.

S. O. LOUISIANA

	Posted Retail T.W.	Tax	Total Posted Retail T.W.	Posted Retail S.S.	Oil T.W.
Little Rock, Ark.	13.5	6	19.5	20.5	12
Alexandria, La.	12.5	*6	18.5	19.5	†13
Baton Rouge, La.	12.5	5	17.5	18.5	†13
New Orleans, La.	12.5	*6	18.5	19.5	†12
Lake Charles, La.	12.5	*6	18.5	19.5	†13
Shreveport, La.	12.5	5	17.5	18.5	†13
Lafayette, La.	12.5	*6	18.5	19.5	†13
Bristol, Tenn.	15	5	20	21	14
Chattanooga, Tenn.	13.5	5	18.5	19.5	13
Knoxville, Tenn.	15	5	20	21	15
Nashville, Tenn.	13	5	18	19	15
Memphis, Tenn.	12	5	17	18	12.5

Note: Discounts in S. O. La. territory: To dealers and commercial consumers from the tankwagon, 2c per gal. off posted retail t.w. price.

*Lake Charles, Alexandria, New Orleans and Lafayette gasoline tax includes 5c state tax and 1c parish tax. New Orleans kerosine price includes 1c parish tax in addition to 1c state tax.

†Kerosine price in Louisiana includes 1c state tax

MAGNOLIA PETROLEUM

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
Muskogee, Okla.	8	4	12	15	9
Oklahoma City.	6	4	10	12	10
Tulsa, Okla.	8	4	12	15	10
Fort Smith, Ark.†	13.5	4	17.5	18.5	12
Little Rock, Ark.*	13.5	5	18.5	19.5	12
Texarkana, Ark.*	13	4	17	17	11
Dallas, Tex.	11	4	15	18	11
Fort Worth, Tex.	11	4	15	18	10
Houston, Tex.	11	4	15	19	11
San Antonio, Tex.	11	4	15	19	10
El Paso, Tex.	12	4	16	20	12

*Within city of Texarkana, the state tax on gasoline is 4c per gal. conforming with the Texas state tax. In this district outside of the city the 5c Arkansas tax applies.

†Within city of Fort Smith, Oklahoma tax of 4c applies. In this district outside of the city, the 5c Arkansas tax applies.

CONTINENTAL OIL

Denver, Colo.	9	4	13	16	12.5
Pueblo, Colo.	10	4	14	17	12
Grand Junc., Colo.	14	4	18	19	14.5
Casper, Wyo.	11	4	15	18	10
Cheyenne, Wyo.	12	4	16	17	11.5
Butte, Mont.	14	5	19	22	16
Helena, Mont.	15	5	20	23	16
Salt Lake City, Utah.	14.5	3.5	18	21	16
Boise, Ida.*	16.5	5	21.5	..	18
Twin Falls, Ida.*	16.5	5	21.5	..	18
Albuquerque, N. M.	11	5	16	20	14

***2.5c off t.w. to dealers at time of delivery at Twin Falls.**

S. O. CALIFORNIA

	Tax	Retail Price	Posted Wholesale	T.W.
Phoenix, Ariz.	5	22.5	20.5	20
Los Angeles, Cal.	3	14.5	14.5	15.5
Fresno, Cal.	3	19	21	17
San Francisco, Cal.	3	19	21	15.5
Reno, Nev.	4	20	22	19
Portland, Ore.	4	20.5	20.5	16.5
Seattle, Wash.	3	17.5	17.5	16.5
Spokane, Wash.	3	22	22	20.5
Tacoma, Wash.	3	17.5	17.5	16.5

Note: 4c per gal. discount to dealers off posted retail price of gasoline to customers taking tank truck delivery, thru S. O. California territory except 3c discount at Phoenix plus a 2c special temporary discount Jan. 30, subject to withdrawal at any time. This discount off the retail price determines net t.w. price.

CANADA

Per Imperial Gallon, which is 1.2 American Gallons)

ONTARIO

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S	T.W.
Toronto	18.5	5	23.5	27	19.5
Ottawa	18.5	5	23.5	27	19.5
North Bay	21.5	5	26.5	32	22.5
Ft. William	21.5	5	26.5	30	21.5
Border Cities, including Windsor	17.5	5	22.5	26	18.5

MANITOBA

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
Winnipeg	20	5	25	29	20.5

SASKATCHEWAN

Regina	25	5	30	34	24

ALBERTA

Edmonton	26.5	5	31.5	35	26.5
Calgary	22.5	5	27.5	31	22.5

BRITISH COLUMBIA

Vancouver	23	5	28	30	24

QUEBEC

Montreal	19.5	5	24.5	28	20.5
Quebec City	20.5	5	25.5	29	21.5
Three Rivers	20.5	5	25.5	29	21.5

NEW BRUNSWICK

St. John	19	5	24	28	21
Moncton	19	5	24	28	21

NOVA SCOTIA

Halifax	19	5	24	28	21

PRINCE EDWARD ISLAND

Charlottetown	19	5	24	28	21

Note: In districts surrounding these points 1c additional is added to city price.

NAPHTHA PRICES

	Oleum Spirits	V.M.&P. Naphtha	Cleaner Naphtha
Chicago	10.7	12.7	14.2
Detroit	13.4	14.9	15.7
Kansas City	†11.9	†13.4	†14.2
Milwaukee	12.4	*15.9	*16.7
Minneapolis	**16.7	**18.2	**19
St. Louis	11.6	13.1	13.9
New York		14	20
Boston		17	20

*Includes 2c state tax. †Includes 1c city tax.

**Includes 3c state tax.

Petroleum Spirits (Solvent)

Tank Cars (F.o.b.refinery or seaboard terminal)	
New York harbor	10.00
Philadelphia district	10.00
Providence	10.50
Tank Wagon or Steel Barrels	
New York City	14
Syracuse	17
Rochester	18
Buffalo	16
Providence	17
Boston	17
Bridgeport	15
Newark	16
Philadelphia	14
Lancaster	17
Altoona	17
Baltimore	17

Note: 2c off above t.w. prices to large buyers in some instances.

Aviation Gasoline Prices

Following are tank wagon prices of aviation gasoline in principal marketing territories showing state and municipal taxes:

S. O. NEW JERSEY

Prices in Effect March 9, 1931

	T.W.	Tax	Total T.W.
Newark, N. J.	16.9	*	16.9
Baltimore, Md.	16.2	4	20.2
Washington, D. C.	17	2	19

*New Jersey road tax of 3c does not apply on aviation gasoline, exemption being claimed at time of purchase.

All above prices are on Stanavo Aviation Gasoline.

COLONIAL BEACON OIL CO.

New York City	17.5	2	19.5
Boston	17	2	19

(*Continued on page 108*)

New Box Type Case

Completely equipped with bottles and jars . . . $15.75

269—A real oil sales case, covered with smooth black cowhide. Lined with red velvet. Case contains fourteen 4-ounce bottles and ten ½-ounce squat grease jars held in position by adjustable bars. Bottles are partitioned separately.

Less 10% for Cash

Other styles in our FREE Catalog

L-U-C-E

Builders of Sales Luggage

614 Delaware, Kansas City, Mo.

SKILLED SUPERVISION

Guarantees the Quality of Gulf Products

COASTAL AND PARAFFINE CRUDES
GASOLINE—LUBRICATING OILS
NAPHTHA—GAS—OILS
WAX—PETROLEUM COKE
CYLINDER—ENGINE—CORDAGE

Gulf Refining Company

General Sales Offices:
PITTSBURGH, PA.

District Sales Offices: New York, Boston, Philadelphia, Louisville, Atlanta, Houston, New Orleans

PIPE STILLS

KELLOGG

The M. W. Kellogg Co., 225 Broadway, New York; Tulsa, Okla., Philtower Bldg.; Los Angeles, Cal., 1031 So. Broadway

BETHLEHEM
WAX PLANT EQUIPMENT

Filter Presses
Wax Distillate Chilling Machines
Wax Testing Presses
Wax Moulding Presses
Scale Wax Cooling Drums
Paraffine Wax Sweater Plants
Complete Wax Plants designed and built
Pumps, Stills, Towers, Condensers, and other Oil Refinery Equipment
Oil Burning Systems

BETHLEHEM STEEL COMPANY, *General Offices: Bethlehem, Pa.*

District Offices: New York, Boston, Philadelphia, Baltimore, Washington, Atlanta, Pittsburgh, Buffalo, Cleveland, Cincinnati, Detroit, Chicago, St. Louis.

Pacific Coast Distributor: Pacific Coast Steel Corporation, San Francisco, Los Angeles, Portland, Seattle, Honolulu.

Crude Oil Prices (in Effect March 9, 1931)

Crude prices for the whole year in OIL PRICE HANDBOOK published annually

EASTERN FIELDS

(Posted by Joseph Seep Purchasing Agency)

Bradford—Alleghany district (posted by Tide Water Pipe Co., Ltd.) (Effective Nov.12,1930) $2.15
Penna. Grade Oil in National Transit Lines (Effective Nov. 12, 1930) *1.85
Penna. Grade Oil in Southwest Penna. Pipe Lines (Effective Nov. 12, 1930) 1.80
Penna. Grade Oil in Eureka Pipe Lines (West Virginia) (Effective Nov. 12, 1930) 1.70
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.) (Effective Nov. 12, 1930) 1.45
Corning Grade in Buckeye Pipe Lines (Ohio) (Effective Dec. 31, 1930) 1.15
Somerset oil in main system of Cumberland Pipe Line (posted by Ashland Refining Co.) (Effective March 6, 1931) $0.75
Ragland Grade in Cumberland Pipe Lines (Kentucky) (Effective Jan. 9, 1929) $0.60
*Oil run prior to July 1, 1929 is 5c less per bbl.

(Posted by Stoll Oil Refining Co.)

Oil City, Ky., oil in Stoll lines (Effective March 7, 1931) $0.70

MICHIGAN

(Posted by Dixie Oil Co.)

Traverse and Dundee (Muskegon), effective March 5, 1931, same gravity and price schedule as Stanolind posts in Oklahoma, Kansas and North Texas, which see below.

(Posted by Pure Oil Co.)

Midland, Midland County (Oct. 28, 1930) $1.10

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

Effective March 6, 1931

Wooster	$0.99	Princeton	$0.80
Lima	0.90	Illinois	0.80
Waterloo	1.20	West Kentucky	0.75
Indiana	0.50		

CANADIAN CRUDE

Posted by Imperial Oil Refineries, Ltd.

Effective Oct. 28, 1930

Petrolia $1.50
Oil Springs 1.57

OKLAHOMA, KANSAS and NORTH TEXAS

Prices of *Stanolind Crude Oil Purchasing Co. (In Oklahoma, Kansas, North and North Central Texas)

Effective March 5, 1931

Below 29	$0.43	35-35.9	$0.57
29-29.9	0.45	36-36.9	0.59
30-30.9	0.47	37-37.9	0.61
31-31.9	0.49	38-38.9	0.63
32-32.9	0.51	39-39.9	0.65
33-33.9	0.53	40 and above	0.67
34-34.9	0.55		

*Prairie Oil & Gas withdrew postings in Oklahoma, Kansas and Texas, Jan. 1, 1931.

On March 5, 1931 these crude purchasers met above prices: Continental Oil Co., Eason Oil Co., Mid-Continent Petroleum Corp., Standard Oil Co. of Kansas, Tidal Refining Co., White Eagle Oil & Refining Co.

Magnolia Petroleum Co. (In Oklahoma, Kansas, North and East Central Texas)

Effective March 5, 1931

Magnolia posts same prices in all three states as Stanolind, except these lower grades:

Below 26	$0.40	27-27.9	$0.42
26-26.9	0.41	28-28.9	0.43

PANHANDLE TEXAS

Humble Oil & Refining Co.

Effective Jan. 14, 1931

Hutchinson and Carson Counties:

Below 29	$0.43	35-35.9	$0.57
29-29.9	0.45	36-36.9	0.59
30-30.9	0.47	37-37.9	0.61
31-31.9	0.49	38-38.9	0.63
32-32.9	0.51	39-39.9	0.65
33-33.9	0.53	40 and above	0.67
34-34.9	0.55		

Gray County:

Below 29	$0.48	35-35.9	$0.62
29-29.9	0.50	36-36.9	0.64
30-30.9	0.52	37-37.9	0.66
31-31.9	0.54	38-38.9	0.68
32-32.9	0.56	39-39.9	0.70
33-33.9	0.58	40 and above	0.72
34-34.9	0.60		

Above prices met by Magnolia and The Texas Co. on Jan. 15 in Hutchinson, Carson and Gray counties.

Wheeler County: Posted by Magnolia Pet. Co. Effective Apr. 10. Humble withdrew Wheeler county postings Apr. 10.

Below 30	$0.755	37-37.9	$1.11
30-30.9	0.805	38-38.9	1.145
31-31.9	0.855	39-39.9	1.18
32-32.9	0.905	40-40.9	1.215
33-33.9	0.955	41-41.9	1.25
34-34.9	1.005	42-42.9	1.285
35-35.9	1.04	43-43.9	1.32
36-36.9	1.075	44 and above	1.355

WEST TEXAS and NEW MEXICO

Humble Oil & Refining Co.

Effective Oct. 28, 1930

Crane, Upton, Crockett, Ector, Howard and Glasscock Counties, Tex., also Lea County, N. Mex.

Below 25	$0.50	31-31.9	$0.64
25-25.9	0.52	32-32.9	0.66
26-26.9	0.54	33-33.9	0.68
27-27.9	0.56	34-34.9	0.70
28-28.9	0.58	35-35.9	0.72
29-29.9	0.60	36 and above	0.74
30-30.9	0.62		

Winkler and Pecos counties, Tex.:

Effective Oct. 28, 1930

Below 25	$0.55	31-31.9	$0.69
25-25.9	0.57	32-32.9	0.71
26-26.9	0.59	33-33.9	0.73
27-27.9	0.61	34-34.9	0.75
28-28.9	0.63	35-35.9	0.77
29-29.9	0.65	36 and above	0.79
30-30.9	0.67		

Oct. 28, 1930, The Texas Co. same prices in Crane, Upton, Winkler and Lea counties as Humble.

Oct. 28, Magnolia same prices in Winkler, Crane, Upton, Howard, Glasscock and Mitchell counties.

SOUTH and SOUTHWEST TEXAS

(Posted by Humble Oil & Refining Co.)

Effective Oct. 28, 1930

Mirando (Jan. 15, 1931) $0.69
Salt Flat 0.90
Darst Creek 0.90
Pettus, Bee County 1.10

(Posted by Magnolia Petroleum Co.)

Corsicana Heavy $0.75
Luling 0.75

NORTH LOUISIANA—ARKANSAS FIELDS

Prices of Standard Oil Co. of Louisiana

Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton, De Soto, Sabine, Cotton Valley, Sarepta and Carterville.

Effective Oct. 30, 1930

Below 29	$0.65	35-35.9	$0.92
29-29.9	0.69	36-36.9	0.95
30-30.9	0.73	37-37.9	0.98
31-31.9	0.77	38-38.9	1.01
32-32.9	0.81	39-39.9	1.04
33-33.9	0.85	40 and above	1.07
34-34.9	0.89		

Smackover, all grades $0.70
Bellevue (Oct. 30) 1.00
*Urania, La. (Oct. 30, 1930) 0.75
†East El Dorado (Calion) (Oct. 30) 0.70

*Posted by Louisiana Oil Refining Corp.
†Posted by Magnolia Petroleum Co.

Oct. 28, 1930, The Texas Co. same schedule in Louisiana as Standard.

Oct. 30, Magnolia met Standard schedule in Louisiana-Arkansas fields except it posts the same low grades in La.-Ark. as in Mid-Continent.

STEPHENS, ARKANSAS

Louisiana Oil Refining Corp., and Atlantic Oil Producing Co.

Effective Oct. 30, 1930

Below 29	$0.54	31-31.9	$0.66
29-29.9	0.58	32 and above	0.70
30-30.9	0.62		

GULF COASTAL

Posted by Humble Oil & Refining Co.

Effective Jan. 14, 1931

Grades A	$0.80	32-32.9	$0.85
Grades B:		33-33.9	0.87
Below 25	0.69	34-34.9	0.89
25-25.9	0.71	35-35.9	0.91
26-26.9	0.73	36-36.9	0.93
27-27.9	0.75	37-37.9	0.95
28-28.9	0.77	38-38.9	0.97
29-29.9	0.79	39-39.9	0.99
30-30.9	0.81	40 and above	1.01
31-31.9	0.83		

On Oct. 28, The Texas Co. posted same prices on Grades A and B Gulf Coast crude as Humble.

Fields classified as A and B are Spindletop, Goose Creek, Hull, Liberty, Sour Lake, West Columbia, Orange, Boling, Humble, Pierce Junction, Sugarland, Refugio county, and Raccoon Bend. All other fields are Grades A only.

Specifications for Grade "A" crude: Gravity; 25° and below, at 60° F; Viscosity: not less than 100 seconds at 100° F. Saybolt.
Sulfur: not over .4%.

Grade "B" includes all Coastal crude which does not meet the test for "A" grades.

Crude Price Changes

ASHLAND, Ky.—On March 6 Ashland Refining Co. reduced Somerset, Ky., crude in Cumberland lines 28 cents, making new price 75 cents per barrel.

CHICAGO.—On March 5 Dixie Oil Co. reduced Muskegon, Mich., crude in amounts ranging from 22 to 40 cents, following a similar reduction on Mid-Continent crude by Stanolind Crude Oil Purchasing Co. on the same day. For new gravity and price schedule, see crude price table on page 103 of this issue.

LOUISVILLE, Ky.—On March 7 Stoll Oil Refining Co. reduced Oil City, Ky. crude 10 cents, making new price 70 cents per barrel.

FINDLAY, O.—On March 6 Ohio Oil Co. reduced Central States crude in amounts ranging from 20 to 50 cents. It discontinued its postings on Plymouth crude, due to production being shut in in that field.

Its reductions in the various fields were: Wooster, 36 cents; Illinois and Princeton, 50 cents; Lima, 20 cents; Indiana, 37 cents; and western Kentucky, 30 cents.

On Jan. 12 it had reduced western Kentucky crude 10 cents, to new price of 85 cents, not previously reported in this publication.

Last previous change on Central States crude was a cut from 35 to 45 cents on Oct. 28, 1930.

New prices in these fields are published in the crude price table of this issue.

CHICAGO.—On March 5 Stanolind Crude Oil Purchasing Co. took the lead in reducing Mid-Continent crude, followed on the same day by the Magnolia Petroleum Co., the Standard Oil Co. of Kansas, Continental Oil Co., Eason Oil Co., Mid-Continent Petroleum Corp., Tidal Refining Co. and White Eagle Oil & Refining Co.

Stanolind company's reduction applied in all Oklahoma, Kansas, North and North Central Texas fields where it purchases on a gravity basis, including Wichita, Wilbarger and Foard counties of North Texas where its price schedule had been from 10 to 28 cents lower since Jan. 16. These three counties were brought in line with the rest of North Texas, Oklahoma and Kansas.

(*Continued on Page* 109)

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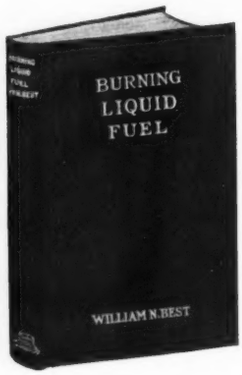

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Crude Oil Prices (in Effect March 9, 1931)

(Prices are per barrel at the well)

(Crude Oil Prices for the whole year in OIL PRICE HANDBOOK published annually)

ROCKY MOUNTAIN FIELDS

(Posted by Midwest Refining Co.)

(Salt Creek prices effective March 5, 1931)

Salt Creek, below 29°		$0.43
" " "	29-29.9	0.45
" " "	30-30.9	0.47
" " "	31-31.9	0.49
" " "	32-32.9	0.51
" " "	33-33.9	0.53
" " "	34-34.9	0.55
Salt Creek	35-35.9	0.57
" "	36-36.9	0.59
" "	37 and above	0.61

(Posted by Ohio Oil Co. and Midwest Refining Co.)

Elk Basin	$0.90
Grass Creek light	0.90
Big Muddy	0.65
Lance Creek	0.98
Rock Creek	0.66
Mule Creek	1.20
Rex Lake	1.10
Pondera	1.45
†Osage	0.50
†Cat Creek, Mont	0.90
Sunburst, Mont	1.55
†Hogback, N. Mex	1.40

†Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin. Others are prices of Ohio Oil Co.

CALIFORNIA

Standard Oil Co. of California

(Effective Sept. 15, 1930)

Gravity	Signal Hill, Seal Beach, Alamitos Heights, Huntington Beach, Inglewood*, Olinda-Brea Canon*	Athens, Rosecrans, Dominguez	Elwood Terrace	Torrance, Richfield	Whittier, La Habra	Montebello	Coyote	Santa Fe Springs	Newhall, McKittrick, Kern River	Midway-Sunset, Elk Hills, Buena Vista Hills, Lost Hills	Coalinga	Wheeler Ridge	Playa del Rey	Kettleman Hills	Orcutt (Santa Maria) (Union Oil Co.)	Santa Paula (Ventura) (Union Oil Co.)	Ventura Avenue (Associated Oil Co.)
14-14.9**	$0.70	....	....	$0.70	$0.70	$0.70	$0.70	....	$0.55	$0.55	$0.55	$0.55	....	....	$0.55	$0.70	$0.70
15-15.9	.70	....		.70	.70	.70	.70	....	.55	.55	.55	.55	....	....	.55	.70	.70
16-16.9	.70	....		.70	.70	.70	.70	....	.55	.55	.55	.55	....	$1.65	.55	.70	.70
17-17.9	.70	....		.70	.70	.70	.70	....	.55	.55	.55	.55	....	for	.55	.70	.70
18-18.9	.76	....		.76	.76	.71	.76	....	.55	.62	.62	.62	....	55-	.65	.75	.76
19-19.9	.82	....		.82	.82	.77	.82	....	.55	.70	.70	.70	....	gravity	.70	.80	.82
20-20.9	.88	....		.88	.87	.83	.87	....	....	.78	.78	.78	$0.74	and	.78	.85	.88
21-21.9	.94	....	F.o.b. ships	.94	.93	.90	.93	$0.92	....	.86	.86	.86	.77	over	.90	.90	.91
22-22.9	1.00	....	....	1.00	.98	.97	.98	.95	....	.94	.94	.94	.81	....	.95	.97	.94
23-23.9	1.07	....	....	1.07	....	1.05	1.04	1.01	....	1.02	1.02	1.02	.84	....	1.02	1.05	1.00
24-24.9	1.12	1.12	....	1.12	....	1.08	1.08	1.05	....	1.06	1.04	1.04	.87	....	1.08	1.07	1.05
25-25.9	1.17	1.17	....	1.17	....	1.11	1.12	1.09	....	1.10	1.06	1.06	.90	....	1.11	1.09	1.10
26-26.9	1.22	1.22	....	1.22	....	1.15	1.16	1.13	....	1.14	1.08	1.08	....	....	1.15	1.12	1.15
27-27.9	1.26	1.27	....	1.26	....	1.19	1.21	1.18	....	1.18	1.11	1.10	....	....	....	1.16	1.19
28-28.9	1.30	1.32	....	1.30	....	1.23	1.25	1.23	....	1.23	1.15	....	....	....	....	1.20	1.23
29-29.9	1.34	1.37	....	†1.34	....	1.26	1.29	1.28	....	1.29	1.19	....	....	....	....	1.24	1.27
30-30.9	1.38	1.42	....	†1.38	....	1.29	1.33	1.33	....	1.35	1.23	....	....	....	....	1.29	1.31
31-31.9	1.43	1.47	....	....	....	....	....	1.38	....	1.41	1.27	....	....	....	....	1.34	1.36
32-32.9	1.48	1.52	....	....	....	....	....	1.43	....	1.47	1.31	....	....	....	....	1.40	1.41
33-33.9	....	1.57	....	....	....	....	....	1.48	....	1.53	1.35	....	....	....	....	1.46	1.47
34-34.9	....	1.62	1.32	....	....	....	....	1.53	....	††1.59	1.39	....	....	....	....	....	1.53
35-35.9	....	1.66	1.39	....	....	....	....	1.58	....	††1.65	1.43	....	....	....	....	....	1.59
36-36.9	....	1.72	1.46	....	....	....	....	1.63	....	....	....	....	....	....	....	....	....
37-37.9	....	1.78	1.53	....	....	....	....	1.68	....	....	....	....	....	....	....	....	....
38-38.9	....	1.84	1.60	....	....	....	....	1.73	....	....	....	....	....	....	....	....	....
39-39.9	....	1.90	1.66	....	....	....	....	1.78	....	....	....	....	....	....	....	....	....
40-40.9	....	1.96	1.72	....	....	....	....	....	....	....	....	....	....	....	....	....	....
41-41.9	....	2.02	1.78	....	....	....	....	....	....	....	....	....	....	....	....	....	....
42-42.9	....	2.08	1.84	....	....	....	....	....	....	....	....	....	....	....	....	....	....

*Inglewood prices run only to 28.9 gravity; Olinda-Brea Canon to 31.9 gravity.
†Richfield crude only. ††These grades apply on Lost Hills only.
**Standard does not contract for crude testing below 14 gravity, but pays 45c per barrel when purchased.

REFINERS' and COMPOUNDERS' SUPPLIES

Following are average market prices for materials used by refiners and compounders effective on the date shown.

Refiners' Supplies

	March 9	March 2
Soda Ash Light 58% bags, cwt.	$1.20-1.38	$1.20-1.38
Silicate of Soda 60 deg. drums, cwt.	$1.75-1.90	$1.75-1.90
Silicate of Soda 40 deg. tank cars, cwt.	$0.70	$0.70
Silicate of Soda 40 deg. drums, cwt.	$1.00	$1.00
Sal Soda wks.	$0.90-1.20	$0.90-1.20
Caustic Soda 76% solid, cwt.	$2.25-2.50	$2.25-2.50
Sulfuric Acid 60 deg. tank cars, f. o. b. shipping point per ton	$11.00-12.50	$11.00-12.50
Sulfur, flowers of, cwt.	$3.10-4.00	$3.10-4.00
Liquid Chlorine, tank cars, wks., lb.	1.75	1.75

Compounders' Supplies

	March 9	March 2
Vegetable Oils		
Linseed carloads, spot, lb.	9.40	9.40
Tanks, spot	8.80	8.80
Soya Bean, Tank, coast, lb.	7.10	7.10
Oleic Acid		
Distilled, tanks, lb.	7.50	7.50
Distilled, bbls., lb.	8.375	8.375
Saponified, tanks, lb.	7.75	7.75
Saponified, bbls., lb.	8.625	8.625
Lard Oils		
Prime Winter Strained, lb.	12.50	12.50
Extra Winter Strained, lb.	9.50	9.50
Extra, lb.	9.25	9.25
Extra No. 1, lb.	8.75	8.75
No. 1, lb.	8.50	8.50
No. 2, lb.	8.25	8.25
Tallow oil, lb.	8.00	8.00
Neatsfoot Oil		
Pure, bbls., lb.	11.00	11.00
Extra, bbls., lb.	9.00	9.00
No. 1 bbls., lb.	8.75	8.75
Cold Pressed, lb.	15.25	15.25
Fish Oils		
Menhaden Oil		
Light Pressed, gal.	36–38	36–38
Light Pressed, tank cars, N. Y., gal.	28–30	28–30
Yellow bleached, gal.	39	39
Whale, extra winter bleached, gal.	80	80
Naval Stores		
Steam, distilled turpentine, N. Y., gal.	42	42
Steam, distilled turpentine, Savannah, gal.	40	40
Gum turpentine, N. Y., gal.	42.50-43.50	42.50-43.50
Gum turpentine, f.o.b. cars Savannah, gal.	37.50-38.50	37.50-38.50
Wood Rosin, N. Y., bbl.	$4.56	$4.56
Wood Rosin F, Savn'h, bbl.	$4.86	$4.86
Gum Rosin B, N. Y., bbl.	$4.50	$4.35
Gum Rosin B, f. o. b. cars Savannah, bbl.	$3.75	$3.35
Rosin oil, pure, gal.	56	56
Rosin, oil, compounded, gal.	50	50
Pine Tar		
Kiln burnt, bbl.	$13.00-14.00	$13.00-14.00
Retort, bbl.	$13.50-14.50	$13.50-14.50
Alcohol		
Denatured Formula 5, in bbls., per gal.	46–48	46–48

Taxed Gasoline Consumption Gains 6% in 1930

NEW YORK, March 6

TOTAL consumption of taxed gasoline in the United States in 1930, excepting New York state for which no figures are yet available for December, was 15,568,965,000 gallons, according to the American Petroleum Institute.

In 46 states and the District of Columbia gasoline consumption for the 12 months ended December, 1930 totaled 13,288,747,000 gallons, compared with 12,549,564,000 gallons in 1929, an increase in 1930 of 739,183,000 gallons, or 6.0 per cent. The two states missing from this compilation are New York and Illinois, for which no comparative figures for 1929 are available.

Gasoline demand in 1929 had gained 12 per cent over demand in 1928.

In December, consumption in 45 states and the District of Columbia totaled 886,308,000 gallons, compared with 833,689,000 gallons in December, 1929, a gain of 52,619,000 gallons or 6.3 per cent, according to reports of wholesalers and dealers who report their sales under the gasoline tax laws in the various states. Daily average consumption last December was 4,000,000 gallons or 11.9 per cent lower than daily average the previous month, being at the rate of 28,591,000 gallons in December, compared with 32,465,000 gallons in November.

The detailed figures by states for December and the 12 months ended December, 1930, are shown in accompanying table.

Gasoline Consumption by States, December, 1930

(Figures in Thousands of Gallons)

	Nov., 1930 Gallons	Dec., 1930 Gallons	Dec., 1929 Gallons	Per Cent Change 1930 from 1929	12 Months Ended With Dec., 1930 Gallons	12 Months Ended With Dec., 1929 Gallons	Per Cent Change 1930 from 1929
Alabama	13,037	13,390	13,561	— 1.26	172,536	178,162	— 3.16
Arizona	6,113	6,497	7,012	— 7.34	76,044	72,862	+ 4.37
Arkansas	9,550	10,686	9,467	—12.88	138,632	134,606	+ 2.99
Colorado	12,793	10,488	10,390	+ 0.94	170,857	155,508	+ 9.87
Connecticut	17,642	17,061	15,016	+13.62	223,244	202,355	+10.32
Delaware	2,507	2,816	3,211	—12.30	35,997	32,576	+10.50
District of Columbia	6,761	6,443	5,785	+11.37	79,469	71,884	+10.55
Florida	18,625	21,213	20,530	+ 3.32	227,691	224,117	+ 1.59
Georgia	17,256	18,191	18,433	— 1.31	223,948	220,602	+ 1.52
Idaho	4,835	3,578	3,976	—10.01	61,265	55,125	+11.14
Illinois	78,101	71,238	63,763	+11.72	.....	.....	.....
Indiana	42,493	35,544	29,603	+20.07	466,713	432,095	+ 8.01
Iowa	33,600	26,670	24,381	+ 9.30	393,215	335,629	+17.16
Kansas	27,790	26,153	26,265	— 0.43	385,528	360,928	+ 6.82
Kentucky	13,665	12,893	11,302	+14.08	168,241	154,816	+ 8.67
Louisiana	16,299	14,527	14,705	— 1.21	183,859	176,770	+ 4.01
Maine	8,765	6,985	5,137	+35.97	108,622	96,036	+13.11
Maryland	13,839	13,837	12,493	+10.76	174,228	163,309	+ 6.69
Massachusetts	42,787	41,998	35,196	+19.33	537,017	501,909	+ 6.99
Michigan	63,279	57,316	53,424	+ 7.29	792,876	785,269	+ 0.98
Minnesota	33,179	25,592	21,718	+17.84	401,572	357,904	+12.20
Mississippi	(a)10,430	(a)10,712	10,767	— 0.51	(a)138,183	141,451	— 2.31
Missouri	37,998	35,581	29,494	+20.64	440,927	392,957	+12.21
Montana	(b) 5,846	4,707	4,667	+ 0.86	82,932	79,167	+ 4.76
Nebraska	18,636	16,370	14,935	+ 9.61	228,446	224,894	+ 1.58
Nevada	1,430	1,335	1,404	— 4.91	18,615	17,813	+ 4.50
New Hampshire	4,990	4,010	3,344	+19.92	64,918	58,323	+11.31
New Jersey	47,847	40,942	37,643	+ 8.76	547,977	498,064	+10.02
New Mexico	4,480	4,414	4,037	+ 9.34	54,661	45,799	+19.35
North Carolina	22,272	22,053	27,522	—19.87	250,669	265,112	— 5.45
North Dakota	7,559	4,096	3,762	+ 8.88	120,034	124,383	— 3.50
Ohio	77,784	70,193	67,196	+ 4.46	970,085	953,552	+ 1.73
Oklahoma	32,643	23,050	26,367	—12.58	329,244	316,302	+ 4.09
Oregon	12,749	11,593	13,170	—11.97	169,872	163,672	+ 3.79
Rhode Island	7,994	6,885	5,781	+19.10	89,220	77,827	+14.64
South Carolina	10,068	9,785	10,112	— 3.23	119,213	118,596	+ 0.52
South Dakota	10,124	7,980	7,485	+ 6.61	137,867	123,931	+11.24
Tennessee	16,478	16,936	16,219	+ 4.42	215,244	195,036	+10.36
Texas	64,785	66,331	65,438	+ 1.36	801,311	769,608	+ 4.12
Utah	4,447	3,792	4,032	— 5.95	60,137	56,547	+ 6.35
Vermont	3,890	2,966	2,419	+22.61	46,998	43,992	+ 6.83
Virginia	18,340	18,056	16,548	+ 9.11	228,454	208,304	+ 9.67
Washington	20,450	19,963	18,722	+ 6.34	271,070	253,457	+ 6.95
West Virginia	11,766	9,953	8,980	+10.84	140,055	126,539	+10.68
Wisconsin	35,437	29,046	26,274	+10.55	437,878	393,396	+11.31
Wyoming	2,675	2,443	2,003	+21.97	36,615	34,547	+ 5.99
Total	973,944	886,308	833,689	+ 6.31	11,022,179	10,395,731	+ 6.03
Daily Average	32,465	28,591	26,893	+ 6.31	30,198	28,481	+ 6.03
Increase over previous year:							
Amount of increase	.....	52,619	.....	.....	626,448	.....	.....
Percentage Increase in Daily average	.....	6.3%	.....	.....	6.0%	.....	.....

	Quarter Ended Sept. 30, 1930	Quarter Ended Dec. 31, 1930	Quarter Ended Dec. 31, 1929		12 Months Ended With Dec. 31, 1930	12 Months Ended With Dec. 31, 1929	
California	357,199	336,140	323,592	+ 3.88	1,336,535	1,253,337	+ 6.64
Pennsylvania	251,874	267,573	247,044	+ 8.31	930,033	900,496	+ 3.28

(a) Estimated.
(b) Revised.

Hydraulic Oiler for Autos

A complete oiling system which forces oil to every part of the bearing surface in automobiles, trucks, buses and machinery of all kinds is the Triple-A Hy-Force hydraulic oiler made by the Triple-A-Specialty Co., Chicago.

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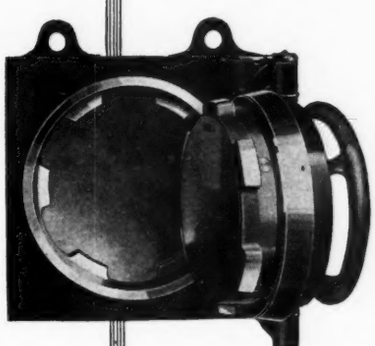
HARD cash—the money you take in during each business day—presents a constant invitation to hold-up men and burglars. They make it their business to discover the places where cash is unguarded. You should make it your business to see that *your* money is beyond their reach.



Illustrated Folder describing the York Round Door Chest in detail will be sent gladly on request.

The York Round Door Chest meets every requirement of the modern

Filling Stations

and has a record for successful resistance to burglars that is unexcelled. When installed, it is anchored in a block of solid concrete which gives complete protection against fire and absolutely prevents removal from the building or attack at any point except the heavy thief-proof door.

The York Chest will pay for itself in a reasonable length of time by the saving in burglary insurance alone.

YORK SAFES

YORK SAFE & LOCK CO.

YORK • PENNSYLVANIA

En-ar-co
MOTOR OIL
White Rose
GASOLINE

YOU will make money if you handle these nationally advertised brands.

All grades of lubricating oils and greases.

The National Refining Co.
Cleveland, Ohio

Gasoline And Other Motor Fuels

by Ellis and Meigs, is a book which gives a complete survey of the field and a description of practically every process of making gasoline and most other motor fuels of promise or prominence.

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PHILADELPHIA

Transactions in Oil Shares on New York Stock Exchange

1929 High	1929 Low	1930 High	1930 Low	Listed Shares	Par Value	Company	Div. Rate	Last Paid	Transactions Week Ended March 7 Sales	First	High	Low	Last	Change§
42⅝	17½	42¼	16½	922,075	N.P.	Amerada Corp.	50cQ	Jan. 30, 31	3,900	19¼	19¼	18	18¼	— ⅞
64¾	12½	37	5⅛	209,180	N.P.	American Republics Corp.	....	.....	2,600	9⅞	11⅝	9⅞	10¾	—1⅜
47¼	34½	51	30	2,240,000	$25	Associated Oil.	50cQ	Dec. 31, 30	.....	.....	.....	.....	.....	.....
77½	30	51¾	16⅝	2,683,868	25	Atlantic Refining Co.	‡25cQ	Dec. 15, 30	27,000	22⅛	22¼	19¾	20¼	—2
49½	20	34	8⅝	2,257,108	25	Barnsdall Corp. A.	25cQ	Feb. 16, 31	21,300	13⅞	14¼	12¼	12½	— ⅞
34½	25	35	21	2,060,966	25	California Petroleum Corp.	....	Jan. 1, 29	.....	.....	.....	.....	.....	.....
32½	12½	20⅝	8¾	1,444,970	N.P.	Colonial Beacon Oil Co.	....	.....	3,000	9½	9½	9¼	9¼	— ¼
37¼	18	30½	7¾	4,610,258	N.P.	Continental Oil (Delaware)	.....	.....	40,600	11¼	11⅜	9⅛	9½	—1⅞
94¾	42¼	71⅛	22⅜	410,857	$100	General Asphalt Co.	$1Q	Dec. 15, 30	9,300	42⅜	42½	36⅜	37½	—4⅝
109	26	116⅞	29¼	250,000	100	Houston Oil.	....	.....	52,000	62	63¼	52¾	55⅛	—5
..	..	10¼	6⅝	.....	..	Houston Oil, new.	....	.....	28,200	12⅝	13⅛	11	12	—1
53	13¼	28⅝	3	699,066	10	Indian Refining.	....	Dec. 15, 20	3,900	3¾	4	3¾	4	+ ⅛
51¼	11½	27¾	3½	568,816	10	do certificates.	....	.....	.....	.....	.....	.....	.....	.....
38¾	16½	29½	21¼	3,994,150	N.P.	Lago Oil & Transport.	....	Aug. 2, 27	.....	.....	.....	.....	.....	.....
18	7	12	3½	1,187,701	N.P.	Louisiana Oil Refining.	....	.....	1,900	4⅛	4⅛	4	4⅛	0
100¼	80	89½	60	40,000	$100	do pfd.	$1.62½Q	Feb. 14, 31	.....	.....	.....	.....	.....	.....
18½	5⅛	10⅜	1¾	330,000	N.P.	Maracaibo Oil Exploration.	....	.....	100	2¾	2¾	2¾	2¾	0
295	176	182	150	459,428	$100	Mexican Petroleum.	$3Q	Jan. 20, 31	.....	.....	.....	.....	.....	.....
105	102	100	100	120,000	100	do pfd.	$2Q	Jan. 20, 31	.....	.....	.....	.....	.....	.....
69⅜	9¼	37	9¾	1,244,383	N.P.	Mexican Seaboard Oil.	....	Oct. 15, 24	77,100	18⅜	18⅞	15¼	17⅛	— ⅞
39¼	22¼	33	11	1,899,138	N.P.	Mid-Continent Petroleum.	50cQ	Feb. 16, 31	10,200	14¼	14⅞	13¼	13½	—1¼
3⅝	¾	2½	¾	908,171	N.P.	Middle States Oil ctfs.	....	.....	.....	.....	.....	.....	.....	.....
..	..	32	16	6,708,086	N.P.	Ohio Oil Co.	50cQ	Dec. 15, 30	24,500	16¾	16¾	14½	15¼	—1¾
69	40½	64½	42	1,000,000	$50	Pan American Petrol. & Trans.	....	Oct. 20, 27	.....	.....	.....	.....	.....	.....
69¼	40½	67½	32	2,422,221	50	do B.	....	Oct. 20, 27	200	35	35½	35	35⅛	+ ⅛
15¼	3	12¾	1⅜	199,370	N.P.	Panhandle Prod. & Refg.	....	.....	600	3½	3½	3⅜	3⅜	— ⅜
76	47½	80	47½	25,666	$100	do pfd.	.....	July 2, 23	20	70	70	70	70	0
..	..	27½	6	2,937,900	N.P.	Petroleum Corp. of America.	37½cQ	Dec. 31, 30	19,900	10⅛	10⅛	8¾	9	—1¼
47	24¼	44⅜	12	2,670,089	N.P.	Phillips Petroleum Co.	50cQ	Jan. 2, 31	102,700	14¼	14¼	11	11⅝	—2½
3⅛	1	2½	½	1,184,917	$25	Pierce Oil Corp.	....	.....	2,600	1⅛	1⅛	1	1	— ¼
51½	20	52	7½	150,000	100	do pfd.	....	Feb. 1, 22	700	21½	21½	18	18	—3
5⅛	½	7⅛	1⅜	2,500,000	N.P.	Pierce Petroleum Corp.	10c	Feb. 16, 31	5,300	3⅛	3¼	2⅝	2¾	— ½
65¾	40½	54	11¼	2,435,670	$25	Prairie Oil & Gas Co.	50cQ	Dec. 31, 30	13,900	18¼	18½	14⅝	15⅝	—3⅛
65	45	60	16⅜	4,050,000	25	Prairie Pipe Line Co.	‡75cQ	Dec. 31, 30	14,400	23½	23½	20⅜	21⅞	—2⅝
25⅛	4	31	1	749,017	50	Producers & Refiners Corp.	....	Sept. 15, 23	300	5½	5⅝	4½	4½	—1½
46¾	25¼	38	11¼	56,907	50	do pfd.	....	May 4, 25	520	15⅞	15⅞	14	14	—2
30¾	20	27¼	7⅝	3,038,370	25	Pure Oil Co.	....	Sept. 1, 30	9,600	10⅜	10⅜	9	8	—1¼
116	108	114½	90½	130,000	100	do 8% pfd.	$2Q	Jan. 2, 31	190	99½	100	99¼	99⅛	— ⅛
49¾	22¾	28½	4¼	2,891,735	25	Richfield Oil (California)	....	Sept. 1, 30	5,900	4¾	4¾	3⅜	4⅜	— ⅜
42½	15	25½	5	1,235,270	N.P.	Rio Grande Oil Co.	....	July 25, 30	9,900	8½	8½	7⅝	7⅝	—1⅛
64	43¼	56½	37⅛	951,310	$13.40	Royal Dutch (N. Y. shares)	$1.3404	Jan. 31, 31	4,000	39	39	38¼	38⅜	— ⅜
55⅝	43¾	48⅜	26	77,492	£2	Shell Trans. & Trading.	96.6c	Jan. 23, 31	.....	.....	.....	.....	.....	.....
31¾	19	25½	5⅛	13,069,076	N.P.	Shell Union Oil Corp.	.....	June 30, 30	18,500	9¼	9¼	8	8¼	—1⅛
..	..	106¼	62	400,000	100	do pfd.	$1.37½Q	Jan. 2, 31	800	67	67	62	62½	—8½
40¾	15	37	5¾	869,255	10	Simms Petroleum Co.	....	Sept. 15, 30	600	10	10	8½	8¾	—1¼
49	21	32	9¾	5,455,665	N.P.	Sinclair Consolidated Oil Corp.	25cQ	Jan. 15, 31	80,800	14⅝	14⅝	12¾	13⅛	—1⅝
111	103	112¼	86	154,685	100	do pfd.	$2Q	Feb. 14, 31	200	102½	102½	102½	102½	— ½
46¼	42	42	10⅜	1,097,650	$25	Skelly Oil Co.	50cQ	Dec. 15, 30	10,600	10	10	8¾	9	— ⅞
..	..	99¾	43	120,000	100	do pfd.	$1.50Q	Feb. 1, 31	1,500	52⅛	52⅛	49	49	—3
..	..	106	98	750,000	100	S. O. Export Corp. pfd.	$2.50S.A.	Dec. 31, 30	800	103⅜	103⅜	103	103	— ⅜
81⅛	51⅜	75	42¼	13,016,434	N.P.	S. O. California.	62½cQ	Dec. 15, 30	29,000	49⅛	49½	45⅝	46¼	—3⅛
..	..	49	14⅜	320,000	$25	S. O. Kansas.	50cQ	Dec. 15, 30	3,700	17	17	15¾	15¾	—1⅜
83	48	84⅛	43½	25,443,643	25	S. O. New Jersey.	‡25cQ	Dec. 15, 30	147,500	49¾	50½	45⅜	46⅞	—2⅜
48⅛	31¾	40⅜	19¾	17,809,530	25	S. O. New York.	40cQ	Dec. 15, 30	29,400	25	25⅛	23¾	24⅛	— ¾
86⅜	55	70	39	1,416,911	N.P.	Sun Oil Co.	‡25cQ	Dec. 15, 30	700	43½	44	43	43	—1
105½	100	107¾	97¾	100,000	$100	do pfd.	$1.50Q	Dec. 15, 30	70	103¾	103¾	103⅝	103¾	— ¼
24	5¼	9⅜	¾	1,026,979	N.P.	Superior Oil Corp.	....	.....	7,000	1⅝	1⅝	1¼	1⅜	— ¼
71½	50	60½	28¼	9,850,724	$25	The Texas Corp.	75cQ	Jan. 1, 31	54,600	33¾	34¼	30⅝	32⅜	— ½
23½	9¼	14½	4	929,947	10	Texas Pacific Coal & Oil.	....	Dec. 31, 29	1,900	5½	5⅞	5¼	5¼	— ¼
23½	10	17¾	5⅛	5,881,980	N.P.	Tide Water Associated Oil.	30cS.A.	Feb. 16, 31	15,200	8¼	8½	7⅜	7⅜	— ⅝
90⅛	74½	89¼	56	732,550	$100	do pfd.	$1.50Q	Jan. 2, 31	800	65½	65½	65	65	—2¼
40	14	31	13	2,191,820	N.P.	Tide Water Oil Co.	20cQ	Dec. 31, 30	.....	.....	.....	.....	.....	.....
97½	85⅜	94⅜	71	199,443	$100	do pfd.	$1.25Q	Feb. 16, 31	200	83	83	80	80	—3
..	..	24	12⅛	3,339,150	N.P.	Transcontinental Oil.	....	May 1, 30	.....	.....	.....	.....	.....	.....
37	42⅜	50	20⅜	2,201,008	$25	Union Oil Co. (California).	50cQ	Feb. 10, 31	8,300	23⅞	24	22⅛	22¼	—2⅛
..	..	38⅛	23	1,254,048	N.P.	Union Tank Car Co.	4CcQ	Dec. 1, 30	800	23	23	22½	22½	— ½
42¼	15	27	4½	777,603	N.P.	Warner Quinlan Co.	....	July 3, 30	700	5¼	6¼	5¼	5½	—1
38	25	29½	26	490,000	N.P.	White Eagle Oil & Refg.	....	Apr. 20, 30	.....	.....	.....	.....	.....	.....
29¾	12⅛	21	6½	428,967	N.P.	Wilcox Oil & Gas Co.	....	May 10, 28	200	6½	6½	6½	6½	— ¼

*New high †New low ‡Also extra s-Stock §From close of preceding week. Total sales 910,200

Aviation Gasoline Prices

(Continued from Page 101)

S. O. PENNSYLVANIA

	T.W. Tax	Total T.W.	S.S.	T.W
Philadelphia, Pa.	18	3		21
Pittsburgh, Pa.	18	3		21
Altoona, Pa.	18	3		21

S. O. OHIO

Thru Ohio.	15	4	19

Discounts given by S. O. Ohio: For airport delivery only; 2,000 gals. or over per month, 1c per gal.; 6,000 gals. or over per month, 2c; 12,000 gals. and over per month, 3c; 24,000 gals. and over per month, 4c.

S. O. INDIANA

Chicago	14	3	17
Indianapolis, Ind.	14.3	4	18.3
Detroit, Mich.	14.8	3	17.8
Milwaukee, Wis.	14.1	2	16.1
Minneapolis, Minn.	15.2	3	18.2
St. Louis, Mo.	13.4	2	15.4
Kansas City, Mo.	13.9	2	15.9
Fargo, N. D.	16.9	3	19.9
Huron, S. D.	15.3	4	19.3
Wichita, Kan.	12.8	3	15.8

In S. O. Indiana territory, buyer pays state and city taxes on aviation gasoline, and if he can get a refund from the state, he does so. Kansas City tax of 3c includes 1c city tax.

S. O. LOUISIANA

	T.W. Tax	Total T.W.	S.S.	T.W.
New Orleans, La.	18	6		24
Nashville, Tenn.	20	5		25
Memphis, Tenn.	19	5		24

2c per gal. discount off above t. w. prices to dealers and commercial consumers.

S. O. NEBRASKA

	T.W.	Tax	Total T.W.
Omaha	16.25	4	20.25

2c per gal. refund to reseller.

CONTINENTAL OIL CO.

Denver, Colo.	12	4	16
Cheyenne, Wyo.	17	4	21
Helena, Mont.	18	5	23
Salt Lake City, Utah.	18.5	3.5	22
Albuquerque, N. M.	15	5	20
Boise, Ida.	20.5	5	25.5

S. O. CALIFORNIA

Phoenix, Ariz.	12	4	21.5
Los Angeles, Cal.	16.5	3	19.5
San Francisco, Cal.	17	3	20
Reno, Nev.	21	4	25
Portland, Ore.	17.5	4	21.5
Seattle, Wash.	17.5	3	20.5
Spokane, Wash.	21.5	3	24.5

Note: 4c per gallon added to t.w. price, in S. O. California territory, to customers taking delivery direct into the fuel tank of planes.

Pittsburgh Stock Exchange

Transactions Week Ended March 6, 1931

	Sales	High	Low	Last	Change Over Week
Ark. Nat. Gas.	145	6	6	6	— ⅜
do pfd.	785	6⅞	6⅝	6⅝	— ⅜
Lone Star Gas.	5,741	25	22¾	23	—2
do pfd.	30	106	105	105	0
Plymouth Oil.	460	17¾	†15¼	15¼	....
Shamrock O. & G.	1,630	11⅝	10½	11	—1
West. Pub. Serv.	2,485	13⅞	12½	12¾	—1¼

†New low record.

Pittsburgh Curb Market

Transactions Week Ended March 6, 1931

	Sales	High	Low	Last	Change
Hopewell O. & G.	526	55¼	55¼	55¼	....

TORONTO—Erection of three storage tanks, warehouse and garage in Halifax, N. S. harbor will be begun shortly by the McColl-Frontenac Oil Co., Ltd. A pipeline to one of the piers to supply marine oil needs of fuel oil and gasoline will also be laid.

Crude Price Changes

(*Continued from Page* 103)

The new prices indicate a reduction of from 22 to 40 cents in Oklahoma, Kansas and North Texas and a flat 12 cent cut in Wichita, Wilbarger and Foard counties.

Minimum grade of below 29 gravity in all fields is $0.43, with a 2 cent differential for each succeeding degree of gravity, up to maximum grade of 40 and above, which is $0.67 per barrel.

Last previous changes by the Standolind on Mid-Continent crude was a 7 to 38 cent cut on Oct. 25, 1930.

DALLAS.—On March 5 Magnolia Petroleum Co. met Stanolind's new price schedule in Oklahoma, Kansas, North and East Central Texas fields, with the exception of these low grades which are at variance with Stanolind's gravity schedule; below 26, 40 cents; 26-26.9, 41 cents; 27-27.9, 42 cents; and 28-28.9, 43 cents.

CASPER, Wyo.—On March 4 Midwest Refining Co. reduced prices of Salt Creek, Wyo., crude in amounts ranging from 22 to 37 cents, following a similar reduction on Mid-Continent crude by the Stanolind company. Gravity schedule on Salt Creek begins with minimum grade of below 29 degrees, which is $0.43, with 2-cent differential for each succeeding degree of gravity, up to maximum grade of 37 and above, at $0.61.

Last previous change on Salt Creek crude was a cut of from 31 to 34.5 cents on Oct. 27, 1930.

On the same date Midwest reduced Elk Basin, Grass Creek, Wyo., and Cat Creek, Mont., crude 35 cents, all to $0.90 per barrel.

On March 6 it reduced Osage, Wyo., crude 35 cents, to new price of $0.50 per barrel.

FINDLAY, O.—On March 5 Ohio Oil Co. reduced Rocky Mountain crudes 35 cents. Sunburst, Mont., crude was unchanged and price posting on Artesia, N. M., was discontinued, due to production in that field being shut in.

Fields affected by the cut were: Elk Basin, Grass Creek, Big Muddy, Lance Creek and Rock Creek.

Last previous change on Rocky Mountain crude generally was a cut of from 10 to 38 cents on Oct. 28, 1930.

LOS ANGELES.—On March 10 Union Oil Co. of California reduced California crude in amounts from 5 to 80 cents per barrel. Its reductions in the following fields amounted to these amounts:

Santa Fe Springs, 25 cents on 21 gravity, up to 80 cents on 40 and above; Signal Hill, Seal Beach, Athens-Rosecrans, 5 cents on 14 gravity, up to 50 cents on 32 gravity; Kettleman Hills, 31 cents on 35 gravity, to 75 cents on 40 gravity. The premium on Kettleman Hills crude for 40 gravity and above was discontinued.

THE OIL INDUSTRY EXCHANGE

THE BUSINESS OPPORTUNITIES column is always interesting. One company with resources of one million dollars and established 25 years is looking for additional lines of merit for distribution to oil producers and industrial plants in the Mid-West. . . . . Then there is a chance to purchase a wholesale gasoline business of 70,000 gallons storage capacity or to go into the company as a partner. . . . . .

Positions Wanted

REFINERY SUPERINTENDENT — Twenty years operation and construction, of lubricating, skimming, asphalt, cracking plants. Desires new connection. Will accept foreign service. Address Box 674.

PETROLEUM TECHNOLOGIST, now employed, with laboratory, plant, development, and executive experience desires new connection. Graduate chemical engineer, 29 years old, married. Protestant. Address Box 678.

Miscellaneous

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For Sale

TANKS FOR SALE. Two—282,000 gallon, 40 ft. dia. 30 ft. high with roofs, match-marked, ready load. Condition excellent. Low price to avoid rehandling. **Tank Specialists**—ZELNICKER IN ST. LOUIS.

Business Opportunities

A NATIONAL SALES ORGANIZATION resources of one million dollars, established 25 years, having oil field supply offices and warehouses in Kansas City and Tulsa, wants additional lines of unquestionable merit, and of large volume, for distribution to oil producers and industrial plants in Kansas, Oklahoma and Texas. Dun credit rating A+A1.

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WHOLESALE GASOLINE · BUSINESS FOR SALE. Located in Western Michigan. 70,000-gallon storage, new truck, pumps and other equipment. Or will take working partner. Address Box 676.

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Continental Trust Building
Washington, D. C.

Standard Oil Stocks on New York Curb

1929 High	1929 Low	1930 High	1930 Low	Outstanding Shares	Par Value	Companies	Div. Rate	Last Paid	Transactions Week Ended March 7 Sales	First	High	Low	Last	Change§
18¾	13½	18½	12¼	.....	£1	Anglo-Amer. Oil voting stk. ctfs..	.....	June 5, 29	.....	....	....	....	....	.....
17⅛	11	19	12	.....	£1	do non-voting stk. ctfs.....	.....	June 5, 29	.....	....	....	....	....	.....
2½	¾	1	⅜	500,000	N.P.	Atlantic Lobos Oil.....	.....	.....	100	¼	¼	¼	¼	+ 1/8
4⅛	1	1½	⅛	200,000	$50	do pfd.....	.....	.....	.....	....	....	....	....	.....
46½	25	25	11¼	40,000	25	Borne Scrymser Co.....	$1S.A.	Oct. 15, 30	.....	....	....	....	....	.....
74¼	55	69	39⅞	200,000	50	Buckeye Pipe Line Co.....	$1Q	Dec. 15, 30	.....	....	....	....	....	.....
210	130	184⅞	100¼	120,000	25	Chesebrough Mfg. Co.....	‡$1Q	Dec. 30, 30	100	125	125	125	125	0
11¾	5⅝	7⅝	3	.....	N.P.	Creole Petroleum Co.....	.....	.....	2,800	3¼	3⅜	3¼	3¼	— ¼
75¾	40	65¾	20¼	30,000	$50	Cumberland Pipe Line Co.....	$1Q	Dec. 15, 30	.....	....	....	....	....	.....
70½	42	54¾	26	50,000	100	Eureka Pipe Line Co.....	$1Q	Feb. 2, 31	50	28	28	28	28	0
...	...	6¾	2½	280,000	N.P.	Galena Oil Corp. w.i.....	.....	.....	.....	....	....	....	....	.....
...	...	37¼	23¼	.....	N.P.	General Petroleum Corp. w.i.....	.....	.....	.....	....	....	....	....	.....
128	74⅛	119	57¼	2,974,645	$25	Humble Oil & Refg. Co.....	‡50cQ	Jan. 1, 31	4,700	62⅛	62¼	57⅛	57⅛	— 4⅝
41	22	30	15	26,490,741	N.P.	Imperial Oil, Ltd.....	12½cQ	Dec. 1, 30	6,200	17¼	17¼	16	16¼	— 1⅛
42⅛	26	41	14½	300,000	$10	Indiana Pipe Line Co.....	50cQ	Feb. 14, 31	200	20	20	20	20	— 1
29⅜	15	24	11⅜	14,247,880	N.P.	International Petroleum Co.....	25c	Dec. 15, 30	10,200	14⅛	14½	13¼	13½	— ¾
25⅞	10½	22⅜	11½	509,000	$12½	National Transit Co.....	25cQ	Dec. 15, 30	1,100	13¼	13¼	13⅛	13⅛	— ⅛
17¾	10	21	10⅛	100,000	10	New York Transit Co.....	40cQ	Jan. 15, 31	500	10¾	10¾	10⅝	10⅝	— ⅛
63	41	54	26¼	40,000	50	Northern Pipe Line Co.....	$2S.A.	Jan. 2, 31	50	29¼	29¼	29¼	29¼	— ¾
105⅛	103¾	108	100¾	600,000	100	Ohio Oil pfd.....	$1.50Q	Dec. 15, 30	300	100	100	99⅜	99⅜	— ⅝
44½	18⅝	32	12	400,000	25	Penn Mex. Fuel Co.....	$1	Dec. 15, 30	200	....	13	14	14	0
50	29	33	4⅞	160,000	25	Solar Refining Co.....	.....	Dec. 20, 29	.....	....	....	....	....	.....
23⅛	13	20⅛	6¾	100,000	10	Southern Pipe Line Co.....	$5	Dec. 1, 30	800	12½	13	12¼	13	+ ½
60¼	35⅛	45⅞	18	1,200,000	25	South Penn Oil Co.....	50cQ	Dec. 31, 30	1,400	19¾	19¾	19¼	19⅜	— ⅜
70	45	64	32	35,000	50	Southwest Pa. Pipe Lines.....	$1Q	Dec. 31, 30	.....	....	....	....	....	.....
63	45	59⅞	30	16,850,587	25	S. O. Indiana.....	62½cQ	Dec. 15, 30	31,200	34¼	34¼	32⅛	32½	— 1½
46⅞	29	40½	18⅜	2,577,124	10	S. O. Kentucky.....	‡40cQ	Dec. 31, 30	5,400	23¼	23¼	22½	23	— ⅛
50¼	40	48⅞	34	188,159	25	S. O. Nebraska.....	62½cQ	Dec. 20, 30	200	35	35	34⅞	34⅞	+ 2¼
129	60	108½	43¼	560,000	25	S. O. Ohio.....	62½cQ	Jan. 2, 31	50	54	54	54	54	0
...	...	...	...	120,000	100	do 5% pfd.....	$1.25Q	Jan. 15, 31	20	104¼	104¼	104¼	104¼	+ ¼
124⅛	113½	122	115¼	70,000	100	do 7% pfd.....	$1.75Q	Dec. 1, 30	.....	....	....	....	....	.....
18	5⅛	10	4	34,158	25	Swan Finch Oil Corp.....	....	Jan. 15, 29	.....	....	....	....	....	.....
133¾	75⅛	97⅞	45⅜	5,139,887	25	Vacuum Oil Co.....	‡$1Q	Dec. 20, 30	9,500	63	63½	59⅛	60½	— 2¾

*New high †New low ‡Also extra §From close of preceding week.

Independent Oils on New York Curb

1929 High	1929 Low	1930 High	1930 Low	Par Value	Companies	Transactions Week Ended March 7 Sales	First	High	Low	Last	Change§
.72	1/8	⅜	1/16	$1	Amer. Contr. Oilfields	.....	....	....	....	....	.....
8⅝	1⅜	4½	½	5	Amer. Maracaibo.....	26,800	⅞	1¾	⅞	1¼	+ ⅜
4¾	1	1⅜	1⅛	10	Argo Oil.....	.....	....	....	....	....	.....
26	3¾	16¾	4⅝	N.P.	Arkansas Nat. Gas...	900	6⅛	6⅛	5¾	5¾	— ⅛
24¾	6½	16⅝	4¾	N.P.	do Class A.....	9,200	6	6⅛	5⅝	5⅞	— ¼
9	4	8⅛	6¼	10	do pfd.....	600	6¾	6¾	6½	6½	+ ¼
70	50	28½	13½	N.P.	British American Oil..	100	14⅛	14⅛	14⅛	14⅛	— ⅛
4⅞	⅞	2¾	⅜	¼	Carib Syndicate.....	34,100	2	2⅛	1⅝	1⅝	— ⅛
68½	20	44¼	13⅛	N.P.	Cities Service.....	82,700	19¾	19½	18	18⅝	— ⅞
99¼	84	93⅞	52	100	do pfd.....	900	83¾	83¾	82⅞	83¼	— ½
9¼	8	9	7¼	10	do pref. B.....	300	7½	7½	7¼	7¼	0
96	81	89⅞	80	100	do pref. BB.....	100	81¼	81¼	81¼	81¼	+1
1½	¼	1/16	⅛	1	Colombia Syndicate..	6,100	⅛	⅜	¼	⅜	+ 1/16
15	3⅞	8¼	1⅛	N.P.	Colon Oil Corp.....	3,800	2½	3⅛	2½	3⅛	+ ¾
...	...	21	3⅜	N.P.	Columbia Oil & Gas..	1,800	6	6½	5⅞	5⅞	— ⅝
11⅜	2½	5⅞	2	10	Consolidated Royalty	300	2	2	2	2	0
135	42	74¾	1½	N.P.	Cosden Oil Co.....	1,800	2¾	2¾	2¼	2¼	— ¾
87	55	70	10¼	100	do pfd.....	.....	....	....	....	....	.....
2½	¼	1	¼	N.P.	Crown Central Pet...	4,800	½	½	⅜	1/16	— 1/16
11½	4	..	..	N.P.	Crystal Oil.....	.....	....	....	....	....	.....
51⅛	51⅛	..	..	100	do pfd.....	.....	....	....	....	....	.....
26	6½	13½	4¼	N.P.	Darby Petroleum.....	.....	....	....	....	....	.....
..	..	21¾	21½	N.P.	do new.....	.....	....	....	....	....	.....
11	2	11	2	N.P.	Derby Oil & Refg.....	1,200	4⅞	5	4	4	—1
44	17	60	30	N.P.	do pfd.....	.....	....	....	....	....	.....
..	..	12	12	10	Devonian Oil.....	.....	....	....	....	....	.....
209	115	166⅞	58½	$25	Gulf Oil Corp.....	8,500	65⅞	68½	64	65¼	—2¾
7½	1⅛	4	2¼	N.P.	Homaokla Oil.....	.....	....	....	....	....	.....
..	..	47½	12¾	N.P.	Indian Territory A...	1,400	16¾	16¾	16¼	16¼	— ½
..	..	53½	12⅝	N.P.	do B.....	.....	....	....	....	....	.....
2⅞	⅜	1¾	⅜	10	Intercontinental Pet..	7,400	½	⅝	⅜	⅝	+ 1/16
3⅝	1¼	3	⅞	N.P.	Kirby Petroleum.....	500	1½	1½	1½	1½	0
6⅛	1	4⅜	½	N.P.	Leonard Oil & Dev...	1,900	⅞	1¼	⅞	1¼	+ ¼
38⅞	18	29	5	N.P.	Lion Oil Refg.....	100	6⅛	6⅛	6⅛	6⅛	— ⅜
67⅞	28	55⅞	19⅝	N.P.	Lone Star Gas.....	3,900	24½	24¾	22½	22½	—2¼
..	..	31	5½	$25	MacMillan Petrol.....	.....	....	....	....	....	.....
2⅞	¼	½	⅜	1	Magdalena Synd.....	2,400	⅜	⅜	1/16	⅜	+ 1/16
38½	14	16	3	N.P.	Margay Oil.....	.....	....	....	....	....	.....
6⅜	2¼	7½	1¾	N.P.	Mexico Ohio Oil.....	200	3½	4¼	3½	4¼	+2⅜
..	..	11⅞	2¼	N.P.	Middle States A v.t.c.	2,200	3⅞	3⅞	3¾	3¾	+ ¼
..	..	6	¾	N.P.	do Class B v.t c.	1,600	1½	1½	1⅛	1⅛	— ¼
42	8	36¼	5	5	Missouri-Kansas P.L.	21,300	8¼	9⅜	7¾	9⅜	+1⅛
1⅜	¼	⅝	⅜	1	Mountain & Gulf Oil..	.....	....	....	....	....	.....
22⅞	7	12⅛	4½	10	Mountain Producers..	2,900	5½	5½	5⅛	5⅛	— ⅜
43⅞	24	41⅜	19⅞	N.P.	Nat. Fuel Gas.....	6,700	24¼	24¼	22½	23⅜	—1⅞
5	2¼	3½	1⅛	$5	New Bradford Oil....	900	1⅜	1⅜	1⅜	1⅜	0
4¾	3⅛	3⅛	2⅛	10	New England Fuel.....	.....	....	....	....	....	.....
24½	11⅛	16⅞	4	25	N. Y. Pet. Royalty...	.....	....	....	....	....	.....
18½	6⅛	11¼	2⅛	N.P.	North Central Texas	500	3⅛	3⅛	3⅛	3⅛	— ⅛
19¼	8⅛	11⅜	3⅞	N.P.	Oilstocks Ltd. A.....	900	4¼	4¼	3⅝	3⅝	— ⅝
18¼	8½	11½	4⅜	N.P.	do B.....	500	4½	4½	4½	4½	+ ⅞
26⅝	12⅛	19½	6½	N.P.	Pacific Western Oil...	2,100	12	12	10⅜	12	0
3½	½	2½	¼	N.P.	Pandem Oil.....	14,000	1/16	½	¼	½	+ 1/16
10½	2¼	4⅜	1	N.P.	Pantepec Oil.....	1,700	1¾	1¾	1½	1½	— ⅜
25½	13⅛	15	13⅛	$25	Paragon Refg. B. ctfs.	.....	....	....	....	....	.....
28	17	29	19⅛	N.P.	Petroleum Corp.....	.....	....	....	....	....	.....
..	..	5⅞	½	....	do warrants.....	.....	....	....	....	....	.....
37	22	27½	16¼	N.P.	Plymouth Oil.....	2,300	17¼	17¼	13⅞	13⅞	—2¼
16	9	10½	3	$5	Red Bank Oil.....	.....	....	....	....	....	.....
8½	1⅛	5⅜	1	N.P.	Reiter-Foster Oil.....	600	1¼	1⅜	1¼	1¼	+ ⅛
25¼	19	23½	7	25	Richfield Oil pfd.....	2,500	6¾	6¾	6⅜	6⅜	+ ⅛
29	13	25	2¼	N.P.	Root Refining pr. pfd.	.....	....	....	....	....	.....
11	3	8⅝	2	N.P.	Ryan Consolidated...	100	2¾	2¾	2¾	2¾	+ ⅛
5⅞	1⅞	2½	½	10	Salt Creek Consol.....	.....	....	....	....	....	.....
25⅞	9	15¼	5¼	10	Salt Creek Producers.	1,800	7	7	6½	6¾	— ¼
33⅛	10	8	1¾	25	Shreveport El Dorado	.....	....	....	....	....	.....
..	..	39⅛	39	25	Signal Oil & Gas A...	.....	....	....	....	....	.....
24	9	17	6	N.P.	Southland Royalty...	1,300	6	6	5¾	6	+ ¼
12	4	10	2	5	Sunray Oil.....	7,600	4½	4½	3⅝	4	— ½
23	7⅛	19½	8	N.P.	Texon Oil & Land....	500	11⅝	11¾	11½	11½	— ⅛
81⅛	8⅞	16	8	10	Venezuela Mexico....	.....	....	....	....	....	.....
6½	1⅛	4½	¾	5	Venezuela Petroleum.	2,800	1	1⅛	1	1	0
9⅛	2	5	2	1	Woodley Petroleum...	.....	....	....	....	....	.....
5⅜	¼	2½	⅜	N.P.	Y Oil & Gas.....	200	⅜	⅜	⅜	⅜	— ¼

*New High †New Low §From close of preceding week.

New York Bonds

Week Ending March 6

	High	Low	Last	Change
Asso. Oil gold 6s.....	103⅜	103	103⅜	+ ⅜
Atlantic Refg. deb. 5s...	102½	101½	101⅝	— ⅜
Cal. Pet. 5s.....	97	96¼	97	+ ¾
Cal. Pet. 5½s.....	100¾	100¼	100¾	+ ¼
General Pet. 5s.....	102⅜	102½	102⅜	0
Humble Oil & Refg. 5s..	102½	101⅝	102	0
Humble Oil & Refg. 5½s.	102⅜	102⅜	102⅜	— ⅛
Pan Amer. P & T 6s.....	102¼	101⅞	102¼	— ⅛
Pan Amer. P & T 6s.....	64	64	64	+1⅛
Phillips Pet. 5⅛s.....	88	78	78	—9
Pure Oil 5½s.....	93	92½	93	— ¾
Pure Oil 5½s.....	93	90	89½	—3
Richfield Oil of Calif. 6s.	63	61¾	61¾	— ¾
Shell Union Oil 5s.....	84	79¼	79¾	—3¼
Shell Union Oil 5s with war.	87	79¾	80	—6¾
Sinclair Con. Oil 7s.....	99¾	98½	98½	—1
Sinclair Con. Oil 6½s...	97	95	95	—1
Sinclair Con. Crude 5½s.	102	101¾	101¾	0
Sinclair Pipeline.....	100¼	99¾	100¼	+ ¼
Skelly Oil 5½s.....	78⅛	77¾	77¾	0
S. O. N. J. 5½s.....	104¼	103½	103½	— ¼
S. O. N. Y. 4½s.....	100¼	100	100¼	0
Union Oil of Calif. 6s A..	106¼	106⅛	106⅛	+ ⅞
Union Oil of Calif. 5s C..	101	100½	101	+1
Union Oil of Calif. 5s war.	97	97	97	+ ⅛

New York Curb Bonds

Week Ending March 6

	High	Low	Last	Change
Beacon Oil 6s '36.....	97½	97½	97¼	— ¼
Cities Serv. 5s '66.....	75⅛	74½	74½	— ¼
Cities Serv. 5s '50.....	80	78⅛	79	— ½
Cities Serv. G. 5½s '42..	80	79½	79½	— ½
Cities Serv. G. P. 6s '43..	88⅞	86⅝	86⅝	— ⅜
Cont. Oil 5¼s '37.....	93¾	93½	93½	0
Empire O & R 5½s '42..	78	77¼	77¼	— ½
Gulf Oil 5s '37.....	102½	102	102⅛	— ⅜
Gulf Oil 5s '47.....	104	103½	103½	— ½
Indep. Oil 6s '39.....	95	95	95	—4
Sun Oil 5½s '39.....	102	101½	101⅞	— ⅛

TULSA, Jan. 31.—G. M. Welling, assistant to J. V. McCormick, tank car sales manager for Phillips Petroleum Co., Bartlesville, has resigned to become affiliated with the Quaker State Refining Co., with headquarters at Kansas City.•

GALESBURG, Ill.—E. R. Kennedy, Kennedy Oil Co., Galesburg, has been appointed chairman of the Illinois Code Committee for 1931. This committee has jurisdiction over all of Illinois except Cook county (Chicago).